

supplying this new load by 33 kv. cable circuits from its Gould Street plant, but three factors persuaded them to have Penn Water provide this line in 1937. The first was the desirability of higher reliability for service than could be provided by a single supply source; second, the recognition that this steel plant load would have tremendous load swings or fluctuations in its power requirements, amounting to from 15,000 to 20,000 Kw. many times an hour, which if superimposed on the cable system would result in serious voltage difficulties throughout the 60-cycle city system; and, third, the anticipation of additional industrial loads in the Riverside area in excess of the cable system then planned.

Q. Beginning at page 9164 of the record, Mr. Roland was questioned with respect to the 25-cycle capacity available to Baltimore prior to and after 1931. By reference to the contract of December 31, 1927, can you state how much capacity was considered as being available to Baltimore under that contract? A. Under the 1927 contract, 48,778 Kw. was considered as the one-hour integrated assured peak supply to Baltimore Company under minimum flow conditions, and an additional [16622] 13,333 Kw. was considered as available for carrying the swings in excess of the one-hour integration. Baltimore Company paid for both the one-hour capacity and swing capacity at the same rate.

Q. Has there been any change in the conditions governing the availability of 25-cycle capacity from the Holtwood plant to Baltimore Company since 1927? A. Yes, there has.

Q. What changes have taken place? A. The construction of the Safe Harbor dam and the operation of the Safe Harbor pond have increased the 25-cycle capacity available to Baltimore from the Holtwood development. Furthermore, the falling off of the 25-cycle load requirements in the Lancaster area has made more 25-cycle capacity available to Baltimore.

Q. What is the magnitude of the present 25-cycle peak supply at Highlandtown from Holtwood for the use of Baltimore Company? A. The monthly peaks delivered at Highlandtown during the last three years have varied with one exception from 60 Mw. to 77 Mw., generally being in excess of 70 Mw.

Q. Are these maximum deliveries greater or less than those experienced between 1927 and 1931? A. They average greater today.

Q. Have you prepared a chart showing the monthly [16623] 25-cycle peak deliveries of energy to Highlandtown Substation for Baltimore Company's use for the period 1927 to date, together with Baltimore Company's own monthly 25-cycle system peaks for the period 1930 to date? A. I have.

MR. SPARKS: I offer it for identification, Your Honor.

TRIAL EXAMINER: It will be marked Exhibit 361.

(The document above referred to was received and marked Exhibit 361 for Identification.)

By MR. SPARKS:

Q. At line 9 of page 9341 of the record, Mr. Roland testified that it was his understanding that the peak transfer energy under the Railroad contract is billed by Penn Water to the Pennsylvania Railroad. Is his understanding in accord with the facts? A. No, it is not. The only bill rendered to the Pennsylvania Railroad for all services provided in connection with the contract, identified as Exhibit 10, is the bill rendered by Baltimore Company on behalf of itself and as agent for the other companies supplying services. This bill as rendered by Baltimore Company specifically includes payments for this "peak transfer energy."

Q. Beginning at page 9456 of the record, Mr. Roland was questioned with respect to the metering points in the York area, used for purposes of determining energy sold

to [16624] the Lancaster and Harrisburg areas of Pennsylvania Power & Light Company and also with respect to the metering points at Lancaster and Harrisburg, used for the purpose of determining the energy sold to the Metropolitan Edison Company. In connection with these transactions with M.E. and P.P.&L., will you explain the situation with respect to these several metering points? A. The actual meter readings of the electric services delivered at York and at Harrisburg do not indicate individually the amounts of energy and other interchange services carried out with the Metropolitan Edison Company or with the Pennsylvania Power & Light Company. Such meters at York and Harrisburg must first be netted to obtain a record of the net deliveries at these two points. Such netting at these two points balances out the large amount of circulating energy that is frequently experienced, and there are days when such circulating energy amounts to 75% of the total gross metering at Harrisburg.

Q. Will you please illustrate this by using certain specific figures? A. The interchange meters at Harrisburg for the year 1944 recorded a gross flow from Penn Water to Pennsylvania Power & Light Company of 41,000,000 Kwh., and a gross flow from Pennsylvania Power & Light Company to Penn Water of 34,000,000 kwh. During many of these hours there was a reversal of power [16625] at this metering point at Harrisburg. The net power flow at Harrisburg correcting for such reversal was 38,000,000 Kwh. from Penn Water to P.L. and 31,000,000 Kwh. from P.L. to Penn Water. There was also a large amount of circulating energy which normally flowed from Holtwood toward York and from M.E. toward P.L. and from Harrisburg back toward Safe Harbor. In the year 1944 this amounted to 16,000,000 Kwh. The net south meters at P.L. must, therefore, be corrected for this circulating energy, reducing such net flow south from 31,000,000 kwh. to 15,000,000 Kwh. There was also a certain amount of unintentional flow from M.E. to Penn Water, some of

which was transmitted by the way of Harrisburg toward Safe Harbor. In the year 1944 this amounted to 4,000,000 Kwh. so that the actual billing of interchange purchased by Penn Water from P.L. in 1944 was only 11,000,000 Kwh. although the gross meter reading at Harrisburg was 34,000,000 Kwh. The billed energy, therefore, was less than one-third of the gross metered energy. Similarly, in connection with interchange transactions between Penn Water and M.E., 4,000,000 Kwh. also flowed to M.E. via Harrisburg so that the net metered delivery at Harrisburg of 38,000,000 Kwh. was reduced by this 4,000,000 kwh. and the actual interchange energy billed by Penn Water to P.L. was 34,000,000 Kwh. compared with the gross meter reading at Harrisburg of 41,000,000 Kwh. Similar corrections have to be made to the gross meter readings at York in order to determine the amount [16626] of energy to be accounted for and billed between Penn Water and M.E. in connection with their interchange transactions.

Q. Mr. Spaulding, as a result of your analysis of the gross meter readings, can you conclude that the assumptions made by Mr. Roland in connection with his Exhibit 42 are applicable to the actual conditions and are related to the energy accounting used in connection with the billing for interchange transactions? A. No, I cannot. It should be obvious that Mr. Roland's Exhibit 42 does not give any consideration to the several factors I have just mentioned.

Q. Beginning at page 9506 of the record, Mr. Roland testified with respect to the effects of oil shortages on the Eastern Seaboard during the war on the amounts of backfeed transmitted from Maryland to Pennsylvania over the facilities of Penn Water. Will you explain what effect such oil shortage did have on the amount of backfeed during 1944? A. During the summer and fall of 1944 there was a critical oil shortage for use by the Public Utilities in the New Jersey and Eastern Pennsylvania areas. Efforts were made by these companies to convert their oil-burning

boilers for the use of coal as fuel, although this was not in all instances practicable. During this period of conversion and afterwards, there was a capacity and energy shortage in these areas due in part to a lack of oil and in part to the national [16627] effort to conserve oil resources. The interconnected companies including Penn Water, Safe Harbor, Baltimore and Washington, used every effort to assist these companies during this oil shortage. As a result there was an abnormal amount of backfeed from Baltimore and Washington in the year 1944 over and above what might have been necessary as a result of lower-than-average river flow. Furthermore, there was more interchange energy furnished by Penn Water to its northern interconnections which might otherwise have gone to Baltimore Company except for this oil shortage. It is impossible to estimate exactly the amounts of such additional backfeed received from Baltimore Company or the amounts of interchange sales to these companies at those times because our operating records do not indicate the specific purpose for each interchange transaction. One measurement is the amount of emergency interchange energy transactions by Penn Water and in part by Safe Harbor which in the year 1944 amounted to 23,676,000 Kwh. By no means did all such emergency interchange involve backfeed supply from Baltimore, but the larger part of such emergency interchange resulted from such oil shortage.

Q. Beginning at page 9511 of the record, Mr. Roland testified with respect to the comparability of load shapes in the years of 1944 and 1946. Were there any appreciable differences in the load shapes for the interconnected system load, that is, the load requirements of the companies in F.P.C. [16628] area 6, together with load requirements of Penn Water's and Safe Harbor's Pennsylvania customers? A. There were.

. . .

[16629] Q. Beginning at page 9512 of the record, Mr. Roland was questioned with respect to the War Production

Board Order L-94. Did this War Production Board Order L-94 have an effect on the flow of energy on your Safe Harbor and Penn Water system during the year 1944?

A. It did.

Q. What effect did it have? A. Section b-1 of Order L-94 made it incumbent upon each utility "to operate its reservoirs, generating plants, substations, transmission lines and other facilities" and to "interchange electric power with other utilities so as to achieve the maximum coordination of power supply for war production and essential civilian uses, and for relief of [16630] power shortages." Penn Water and Safe Harbor, as well as all of the other utility companies on the Eastern Seaboard between the Potomac and Hudson Rivers, made every effort to assist each other in the many instances that arose during the war, and specifically during the year of 1944, not only during fuel shortages but during those periods when it was essential to take certain equipment out for maintenance or where abnormal loads were encountered in one system or the other in excess of their readily available capacity. The effect of this War Production Board Order L-94 resulted in abnormalities of energy flow on the system of Penn Water and Safe Harbor in the year 1944.

Q. Is the Exhibit which was offered for identification in the record as Exhibit 228, the Order of the War Production Board L-94, dated May 1, 1942, which you have just referred to, and which your Company recognized as a basis for certain obligations in its operations? A. It is.

Q. Is Exhibit 229, being an Administrative Letter dated August 20, 1945, the effective revocation of Order L-94? A. It is.

Q. On page 9548, Mr. Roland testified that the Railroad Company in sending a check to Baltimore Company for service rendered to the Railroad Company under contract identified as Exhibit 10, did so with the understanding that [16631] Holtwood Company should receive a part of it. Is it a fact that the Railroad Company in paying Baltimore

Company does so with the understanding that each of the parties to the contract will receive a portion of such payment in proportion to the services rendered? A. There is no such understanding on the part of the Railroad Company. The Railroad Company merely considers that it has met its obligation to the contract when its check is made to Baltimore Company and there is no other arrangement to which the Railroad Company is a party that provides for any division for such payment. Furthermore, it was and always has been recognized that the division of such payment between Penn Water and Baltimore Company, in accord with the Operating Committee's memo, identified as Exhibit 11, did not make an equitable division of the payments, but was merely an arbitrary division and that any further debits or credits for service could be covered by payments made to Penn Water and Safe Harbor under contracts identified as E, F, G, H and I.

Q. On page 9479 of the transcript, Mr. Roland was asked about the load swings of the customers served by the Penn Water and Safe Harbor system and indicated that he had not examined any information that would indicate the magnitude of such swings. Had Mr. Roland ever discussed this matter with you? A. Yes, he had, and spent nearly an hour in the Load [16632] Dispatcher's office of Penn Water and Safe Harbor examining the several graphic load and power flow charts, with specific reference to the load swings encountered. There was at that time considerable discussion about the load swings of the Bethlehem Steel Company, a customer of Baltimore, which swings are frequently in excess of 30,000 Kw., and we discussed the effect of these swings both on the frequency and voltage and their effect on the general services of the Companies. Mr. Roland also expressed considerable interest in how these load swings of the Bethlehem Steel Company and those of the Pennsylvania Railroad were directly reflected on our charts of power flow over our Northern interconnections, which indicated that Baltimore Company

was leaning heavily on these ties to carry these sharp load fluctuations that would otherwise be an operating and economic burden to Baltimore Company. These matters appeared to interest Mr. Roland at that time.

Q. Beginning at page 10176, Mr. Howell testified that his Exhibit 47 had been taken to Baltimore for the purpose of having it checked by Company officials. Was Exhibit 47 checked for accuracy by any persons associated with your Company? A. Several of my associates endeavored to check certain of the data Mr. Howell had recorded and so far as the limited time permitted, to review his factual statements. Mr. Howell had advised us that he was in a hurry to turn his Exhibit over for printing. We found many inaccuracies which we called to [16633] Mr. Howell's attention but we were unable to complete our review of this Exhibit.

Q. Did you tell him you thought it needed certain revisions? A. Yes, and made several notes on his copy of the early draft of that Exhibit. I specifically cautioned him that we did not attempt to check all of his statements and that we could not agree with certain of the statements that we had reviewed.

Q. At page 10179, Mr. Howell testified with respect to the 25-cycle loads of Baltimore Company. Has that Company recently indicated their intentions of abandoning and replacing a portion of this 25-cycle capacity on their own system? A. It has.

Q. What is the nature of that information? A. Baltimore Company has released statements to the press and to their stockholders that they intend to provide additional capacity at Westport to replace certain old equipment to be retired. They have further advised our Company that they intend to provide a 60,000 Kw., 60-cycle unit at their Westport Plant in about 1950 to replace an equal amount of old 25-cycle capacity there.

Q. What effect will such change have upon the 25-cycle demands of Baltimore Company upon Penn Water? A.

Baltimore Company's estimate of their 25-cycle [16634] requirements in 1955 is in excess of 120,000 Kw. and they are planning to depend very largely on the Holtwood 25-cycle supply supplemented by their own frequency changer capacity in Baltimore, for by that time they are planning to retire all of their 25-cycle generating capacity in Baltimore.

Q. In the light of such announced plans of Baltimore Company, do you anticipate that your present 25-cycle supply to Baltimore Company at Highlandtown will be changed from 25 to 60 cycles within the next decade? A. No, I do not.

Q. At page 10211 in connection with Mr. Howell's testimony with respect to Exhibit 47, he stated his understanding of the use made of the 25-cycle transformers at Holtwood. Is it a fact that two of the nine transformers are used for the 25-cycle service to Lancaster and the other seven transformers used for service to Baltimore Company? A. No. Seven of the nine 25-cycle transformers at Holtwood are used exclusively for service to Baltimore Company, and one transformer is required for service to Pennsylvania Power & Light Company at Lancaster. The ninth transformer serves as a reserve for either the Lancaster supply or the Baltimore supply, but is regularly used in supplying Baltimore Company.

Q. At page 10521 Mr. Davis stated that Metropolitan Edison Company does not supply any energy to Pennsylvania Power [16635] & Light Company. As he used the term "supply", he meant delivery. Is it a fact that Metropolitan Edison Company does not supply any energy to Pennsylvania Power & Light Company, as Mr. Davis used the word "supply"? A. No, it is not a fact. Metropolitan Edison Company does supply energy to Pennsylvania Power & Light Company for Penn Water, and for the following reason: The inter-connections with Pennsylvania Power & Light Company and with Metropolitan Edison

Company operate as two parallel paths between Penn Water and Safe Harbor on one hand and their Northern customers on the other. It is impossible to control the flow of power on each of these two parallel paths. Therefore, when power is being interchanged between Penn Water and Safe Harbor on the one hand and these Northern companies on the other, some of this power may flow over each circuit although the interchange transaction may have been arranged with only one of these two customers. In the event arrangements are made to supply Pennsylvania Power & Light Company with a specified amount of interchange energy, it frequently happens that a portion of this energy will flow through Violet Hill into the Metropolitan system, in which case Metropolitan Edison Company does supply such energy to Pennsylvania Power & Light Company.

Q. At page 10522 Mr. Davis was questioned with respect to the source of the supply by Penn Water to Pennsylvania Power & Light Company. What is the major source of the [16636] energy so supplied? A. Most of the 60-cycle service is generated at the Safe Harbor plant, and substantially all of the 25-cycle service is generated at the Holtwood hydro plant.

Q. Beginning at line 15, page 10537 Mr. Davis testified with respect to an option on the part of Penn Water and Safe Harbor to reduce their demand obligations to Pennsylvania Power & Light Company under their contract during periods of low flow. Is this option now in effect? A. It is.

Q. When did it go into effect? A. As of February 15, 1947.

Q. Under the provisions of this contract does Penn Water and Safe Harbor have the option of reducing their obligations to Pennsylvania Power & Light Company during periods of low flow to 80% of the Lancaster load requirements? A. Yes.

Q. Since February 15, 1947 have Penn Water and Safe Harbor exercised their option to reduce their obligations to less than 100% of the Lancaster load requirements?

A. No, we have not.

[16637] Q. Are they in a position to do so in the event you experience extreme low flows comparable to the lowest flow on record such as was used by Mr. Davis as his assumption for the determination of dependable hydro capacity in connection with Exhibit 64? A. Yes.

Q. At line 13, page 10548 of the record Mr. Davis testified "As an engineering and operating matter, Safe Harbor has no physical ability to do anything under" the Coatesville power supply contract. Is it a fact that Safe Harbor has no such physical ability? A. It is not. As an engineering and operating matter, Safe Harbor has the same, if not greater physical ability to generate energy, capacity, spinning reserve, etc., as Penn Water. There are ample transmission facilities between Safe Harbor and Penn Water where connection is made with the transmission facilities between Holtwood and Coatesville. Safe Harbor has the same ability from an engineering and operating point of view to supply Coatesville as it has to supply Baltimore or the Pennsylvania Railroad Company. It has the same ability to supply Coatesville that Baltimore Company has to supply service under its contract with Potomac Electric Power Co.

Q. Since 1933 has Safe Harbor physically provided electric service for supply to Coatesville or to its other customers at a time when Penn Water was unable to do so?

[16638] A. Yes, during the 1936 flood when Penn Water's hydro and steam plants were forced to shut down completely and were unable to supply any electric service to its customers, Safe Harbor provided all of these services to the full extent of the requirements of these several joint customers, not only because Safe Harbor had the operating responsibility to perform this obligation, but because as an

engineering and operating matter Safe Harbor had the physical ability to do so.

Q. Does Safe Harbor as an engineering and operating matter also have the physical ability to supply Pennsylvania Power & Light Co. and the Pennsylvania Railroad Co.? A. Yes, it does, and during my cross-examination I specifically indicated how Safe Harbor controls to a large extent both the facilities used and the amount of supply furnished to Pennsylvania Power & Light Company and to the Pennsylvania Railroad Company.

Q. Has the Federal Power Commission ever specifically recognized that Safe Harbor Water Power Corporation and Penn Water jointly "sells electric power and energy" to the Coatesville Division of the Philadelphia Electric Co.? A. Yes, it has.

Q. In what connection? A. It so stated in its Order dated June 30, 1939. "In the matter of Safe Harbor Water Power Corporation", Order allowing a supplemental rate schedule to take effect prior to [16639] date of filing.

MR. SPARKS: I ask to have this identified as Exhibit No. 364.

(Exhibit No. 364 is marked for Identification.)

By MR. SPARKS:

Q. Is this exhibit the Order of the Commission just referred to? A. It is.

Q. Beginning at line 14, page 10552 of the record, Mr. Davis testified that Penn Water is the only Company that has any ability to perform the obligations under the Coatesville Power Supply Contract. In the light of your last several answers do you agree with Mr. Davis' statement? A. Certainly not. Penn Water and Safe Harbor have the joint operating responsibility and they each have the ability to perform the obligations under the contract with the Philadelphia Electric Company for firm power supply to its Coatesville Division.

Q: Beginning at page 10560 Mr. Davis testified that it was his understanding that the difference under the present Metropolitan Edison Co. contract, identified as Exhibit 72, and the contract with the Edison Light & Power Co., which it superseded, being Exhibit 71, was that Exhibit 72 provides for a firm power capacity considerably larger than heretofore furnished to Edison Light & Power Company. Have you prepared a chart to indicate the [16640] difference in the amounts of firm power service rendered under these two contracts? A. Yes, I have.

MR. SPARKS: I will ask the reporter to mark this with the next exhibit number.

(Exhibit No. 365 is marked for Identification.)

By MR. SPARKS:

Q. Will you please explain this exhibit? A. The chart is generally self-explanatory. Prior to 1946 Penn Water and Safe Harbor had an operating responsibility for a more or less uniform and constant amount of energy and capacity. Under the present Metropolitan Edison Co. contract the amount of services fluctuate widely with river flow. This exhibit does not attempt to show the other services furnished, such as reactive power, spinning reserve, etc., which also is of importance and specifically provided for under the existing contract identified as Exhibit 72. To the right of the chart is shown a comparison of the daily load requirements under the earlier Edison Light & Power Co. contract, at which time Penn Water and Safe Harbor were responsible for 40 per cent of Edison's requirements. Under the present Metropolitan Edison Co. contract Penn Water's obligations vary with river flow.

Q. At page 10568 of the record Mr. Davis testified as to the special facilities shown on Table 9, Exhibit 47, [16641] furnished by Safe Harbor, used in providing services to the Pennsylvania Railroad Co. Are all of the special facilities so provided contained in this table? A. I believe they are all referred to generally, but the costs

which the Companies used as a basis for the specified annual charges were limited to the additional out-of-pocket costs to Safe Harbor or Penn Water in furnishing such facilities.

Q. Will you give an example of what you refer to? A. Table 9 of Exhibit 47 refers to certain annual charges related to the initial frequency converter and single phase generator at Safe Harbor. The contract identified as Exhibit 10 provided that two of the generators at Safe Harbor would be designed for 25 cycle single phase generation. The specified annual charge for the initial generator was related only to the increased costs of providing a 25 cycle single phase generator as compared to the cost of providing a 60 cycle generator. The specified facilities charges therefore do not include any annual costs related to the water wheel turbine, to the structures, or to the associated equipment.

Q. Has the Federal Power Commission ever specifically recognized that the Safe Harbor Corporation provided facilities for the purpose of supplying energy to the Pennsylvania Railroad Company and for the purpose of selling such energy to the Pennsylvania Railroad Co.? A. It has.

[16642] Q. In what connection? A. In connection with its Order of September 22, 1939. "In the matter of Safe Harbor Water Power Project No. 1025", Order authorizing installation of additional generating unit.

MR. SPARKS: I ask that this be marked Exhibit No.

366.

(Exhibit No. 336 is marked for Identification.)

By MR. SPARKS:

Q. Is this the document you refer to? A. Yes, it is.

Q. Beginning at page 10581 of the record, Mr. Davis testified with respect to Table 11 of Commission's Exhibit 47. Do the amounts of kilowatthours shown in column 3 of Table 11 as sales to the Railroad by Baltimore and Holt-

wood Companies, respectively, indicate the actual deliveries to the Railroad for the various years shown by each of those companies? A. They do not. The only deliveries to the Railroad for each of the years shown on Table 11 are the "Total" sales of kilowatthours shown. The kilowatthours shown in column 3 opposite Baltimore and Holtwood, respectively, are merely the amounts of the kilowatt-hours delivered to the facilities of the Railroad in the States of Maryland and Pennsylvania, respectively.

Q. Are the amounts of revenues shown in column 4 the actual amounts paid for the kilowatthours shown in column 3 respectively? A. They are not. The dollars shown in column 4 opposite the "Total" kilowatt-hours have no relation to the total kilowatt- [16643] hours. They are the total dollars paid by the Railroad for all of the services rendered under the contract identified as Exhibit 10, which total dollars are made up of specified charges for capacity, energy, and for special facilities. The revenues in column 4, opposite Baltimore and Holtwood, respectively, in column 2, are merely the division of the total revenues for each year computed upon the relative proportion of the energies shown in column 3.

Q. What proportion of the total revenues received from the Railroad was for energy charges? A. Approximately 55 per cent in the year 1944.

Q. What proportion of the total revenues so received from the Railroad was for special facilities' charges? A. Approximately 15 per cent in the year 1944.

Q. What percentage of the total revenues so received from the Railroad was for demand charges? A. Approximately 30 per cent in the year 1944.

Q. Does the average revenue received per kilowatthour shown in column 5 have any significance? A. It does not.

Q. Why not? A. The average revenue per kwh, shown in column 5 for the total sales to the Railroad is not an indication of the amount charged for energy services,

but is an indication of the [16644] amount charged for energy, capacity, and special facilities. Had an analysis been made of the use made of special facilities and of capacity by the Railroad in Pennsylvania and Maryland, respectively, the so-called average revenue per kilowatt-hour in column 5 would not be the same for the supply in Maryland and in Pennsylvania.

Q. Beginning at page 10589 of the record, Mr. Davis testified with respect to ~~table 10~~ of Exhibit 47. Are the figures shown in the last column of table 10 taken from any bill rendered by Penn Water to the Railroad? A. No.

Q. What do such figures represent? A. They merely represent the division which Penn Water receives from Baltimore Company as the result of the arbitrary division of the total revenues made in accord with Exhibit 11 in these proceedings.

Q. What do the figures in the second from the last column in the exhibit represent which are headed "PW-KWH"? A. They are merely the amounts of Kwh. delivered to the facilities of the Railroad in the State of Pennsylvania and which are used by Penn Water and Baltimore Company as a basis for the arbitrary division of the total revenues received by Baltimore Company from the Railroad.

Q. At page 10595 of the record, Mr. Davis testified with respect to the \$6,000 annual credit to the Railroad [16645] Company for the use of a 110 Kv. circuit that extends from Benning over to Westport. Is this 110 Kv. circuit used by Baltimore Company for its own benefit? A. It is.

Q. Did the Railroad build a circuit from Benning to Westport? A. No, it did not.

Q. What are the facilities for which the Railroad receives this credit? A. The Pennsylvania Railroad overbuilt on its electrification structures a three-wire circuit insulated for 110 Kv. operation, from a point adjacent to

the Railroad's own step-up transformer substation at Benning to a point near the Patapsco River, just south of Baltimore, where interconnection is made with the ring circuit facilities of Baltimore Company.

Q. Why were these facilities provided in connection with the Railroad power supply contract? A. Under the power supply contract, identified as Exhibit 10, Potomac Electric Power Company has no operating responsibility to provide capacity or other electric services to the Railroad and only provides the frequency changer facilities at Benning. The Railroad desired assurances of what was then referred to as a "firm back-up" for this Benning supply. Baltimore, Penn Water and Safe Harbor could not give the Railroad such assurances, in part because of limited cable capacity in Potomac Electric [16646] Power Company system between the terminal substation of the 220 Kv. transmission line near Takoma Park and Potomac Electric Power Company's Benning frequency changer. The Railroad, therefore, agreed to provide this transmission facility in order that Baltimore, Penn Water and Safe Harbor could assure the Railroad of a firm supply from Benning at a point on the southern end of the Railroad's electrification. In recognition of the fact that these facilities would also be used by Baltimore Company for other purposes, the Railroad provided these facilities but received a credit of \$6,000 for their use.

Q. Why do you say then that this 110 Kv. circuit is used by Baltimore Company for its own benefit? A. This 110 Kv. circuit is regularly used by Baltimore Company for interchange of electric services with Potomac Electric Power Company under their power supply contract. If it did not exist, Baltimore would not be able to obtain as much interchange service from Washington, although it would be in a position to provide its contractual obligations to Washington. The operating records for the last five years indicate that more than one-third of all the services to Washington from Baltimore and over 25 per cent of all

electric services transmitted from Washington to Baltimore were transmitted over these 110 Kv. 60 cycle line facilities.

Q. At line 23 of page 10695, Mr. Davis testified that the [16647] amount which Baltimore paid Penn Water shown in the last column on Table 10 of Exhibit 47 compensated Penn Water for all special facilities provided for service to the Railroad. Is this a factual statement? A. It is not. The amount so computed is an arbitrary determination of the division of the total revenues. It does not relate either to the amount of special facilities provided or to the other services actually rendered by Penn Water and does not compensate Penn Water in full for the special facilities provided by it in connection with services to the Railroad.

Q. Beginning at page 10730, Mr. Davis testified with respect to Table 2 of Exhibit 47 and the kilowatthours shown in column 3 thereof, which he stated were sold by Safe Harbor to Baltimore, and Penn Water, respectively, for the years shown. Are the kilowatthours shown in column 3 for Baltimore and Holtwood, respectively, the actual kilowatthours delivered to those companies for the years shown? A. They are not. They are merely the mathematical equivalent of the two-thirds and one-third, respectively, of the total output of the Safe Harbor plant, after a minor adjustment for losses. The actual deliveries by Safe Harbor for Baltimore Company and Penn Water during these years were quite different and especially during the last five years when Baltimore received nowhere near the two-thirds of Safe Harbor's total [16648] output, as I testified to in my redirect testimony.

Q. Are there any records in the Federal Power Commission's files showing for the year 1946, the actual amounts of Safe Harbor energy supplied by Safe Harbor for delivery to Baltimore Company? A. Yes.

Q. Where are such data to be found? A. Such data are shown in the Form 1 Report for 1946, recently filed by Safe Harbor Company.

Q. Does this Safe Harbor Form 1 report also show the amounts of energy delivered by Safe Harbor Company to Penn Water for their joint supply to their Pennsylvania customers? A. Yes.

Q. Does the Penn Water Form 1 Report show the amounts of Safe Harbor energy delivered to the joint customers of Penn Water and Safe Harbor, namely, Pennsylvania Power & Light Company and Philadelphia Electric Company for its Coatesville Division? A. There are shown on Schedules 530 and 552 of Penn Water's Form 1 Report, the amounts of energy delivered to such customers and the revenues received for all services supplied to these customers by Penn Water and Safe Harbor jointly. Such revenues are collected by Penn Water acting for itself and as agent for Safe Harbor.

Q. Does this Penn Water Form 1 report also show the [16649] amount of energy from Safe Harbor delivered to the Pennsylvania Railroad Company? A. Yes. Schedule 532 shows the deliveries made by Penn Water and Safe Harbor jointly to the Pennsylvania Railroad, in part being deliveries in the State of Pennsylvania and in part being deliveries at Perryville and Conowingo to the Railroad. The revenues shown on that same schedule are not related to the services rendered but are merely the amounts which Penn Water is entitled to receive as a division of the total revenues received by Baltimore Company from the Railroad for 1946.

Q. Did Penn Water actually receive from Baltimore such a division, to which it is entitled, of the Railroad revenues in 1946? A. No.

Q. At page 10745, Mr. Davis was questioned about the bills rendered to Penn Water by Baltimore Company for backfeed. Have there been times since the effective date of the 1931 Supplemental Agreement, identified as Items H and I, when Baltimore did actually render a bill to Penn Water for the amount of backfeed energy furnished during any period? A. Yes, there have been.

Q. How were the amounts of such bills computed?

A. Such bills were computed generally in accord with Article 6 of the 1927 contract which is a part of Item H in [16650] these proceedings. The daily net backfeed was computed from the actual meter readings of energy flow between Baltimore on the one hand and Penn Water and Safe Harbor on the other. The energy rate applied to such daily net backfeed was the total average unit production cost at Baltimore's Westport Station for the month, such cost including all operation and maintenance expenses. Such average rate is shown on the face of the bills rendered by Baltimore to Penn Water for such backfeed energy.

MR. SPARKS: I would like to have marked for identification this copy of the backfeed bill, as Exhibit 367.

(Exhibit No. 367 is marked for Identification.)

By MR. SPARKS:

Q. Is this document a copy of one of the bills you have just referred to? A. It is.

Q. How were the amounts paid by Penn Water to Baltimore Company for backfeed services treated in the determination of the power bill for services to be rendered under the 1931 Supplemental Agreement identified as Items H and I? A. Such payments were treated as a payment by Penn Water for power purchased:

MR. SPARKS: I wish to have marked as Exhibit 368 the Holtwood Company's bill to Baltimore Company for December, 1931.

(Exhibit No. 368 is marked for Identification.)

[16651] By MR. SPARKS:

Q. I show you Exhibit 368 and ask you if this is a copy of Penn Water's bill to Baltimore Company for the year 1931 for services rendered under the contract identified as Items H and I? A. It is.

Q. Will you indicate the treatment in this bill of Holtwood Company's payments for power purchased as back-

feed? A. Item (d)2 records the payments made by Penn Water to Baltimore Company for backfeed in 1931 in the amount of \$14,452.47, such amount being included in the item entitled "Sum of (a), (b), (c), and (d)."

Q. Has there been an appreciable amount of daily net backfeed recorded within the past four or five years?

A. Yes, there has.

Q. Has there been any billing for such backfeed since 1931? A. Yes, there was billing for backfeed in 1932.

Q. Has Baltimore Company billed Penn Water for such backfeed in recent years? A. No.

Q. Why not? A. The matter was discussed by the Operating Committee and with Baltimore Company's counsel in 1941 and it was [16652] recommended that Baltimore Company need not bill Penn Water for such backfeed because there would be no net effect on the income of either party and no outside parties would be affected.

Q. Will you please explain why? A. Had Baltimore Co. billed Penn Water for such backfeed, the operating revenues and the operating expenses of both companies would have been increased alike to the extent of the amount billed for such backfeed, but the operating income and the net income of both companies would have been unaffected.

Q. Have you prepared a tabulation showing the backfeed energy received by Penn Water from Baltimore Company in the years 1944, 1945 and 1946 showing the annual amounts of net hourly backfeed, the annual amounts of daily net backfeed for each year, and the applicable contract rates of Baltimore Company for such daily net backfeed? A. I have.

MR. SPARKS: I will ask the reporter to mark for identification as Exhibit No. 369 this tabulation "Backfeed Energy Received from Baltimore Company."

(Exhibit No. 369 is marked for Identification.)

By MR. SPARKS:

Q. Is this the tabulation you just referred to? A. It is.

[16653] Q. Beginning at page 10759, Mr. Davis testified with respect to the effect of the M. E. contract, identified as Exhibit 72, and was questioned as to whether such contract resulted in an increased use of the natural resources of the Susquehanna River as contrasted with operations under the old Edison Light and Power Company contract, Exhibit 71. Is it a fact that the operations under Exhibit 72 have resulted in an increased use of the natural resources of the Susquehanna River? A. Yes.

Q. Why? A. Without attempting to go into all of the operating details, I can give two specific reasons: First, because of the change in the form of contract, Penn Water and Safe Harbor are enabled to operate their hydro capacity and to utilize the available energy from the river flow during a smaller number of hours and thereby get a greater capacity utilization as is generally shown from an examination of my Exhibit 8 in these proceedings. Secondly, whenever hydro developments, such as those at Holtwood and Safe Harbor are utilized and operated to provide the requirements of the peaks of several systems, rather than required to supply a more or less uniform twenty-four hour load, a greater utilization of the natural resources can be obtained.

Q. Do you mean, Mr. Spaulding, that the greater the number of systems on which the hydro is operating, the greater [16654] is the opportunity for utilizing the natural resources? A. Yes.

Q. Do you agree with the designation used by Mr. Thomas at page 1236 of the record, referring to the Holtwood and Safe Harbor plants as "run-of-river" type developments? A. No, I do not.

Q. In what respect do you disagree with this designation? A. First, he related the water stored behind the dams to the annual energy output and such relationship is not controlling either at these plants or anywhere else. Second, he related the amount of storage to the maximum usable flow at Safe Harbor which is likewise not a con-

trolling consideration. Third, his statement that the river flow cannot be stored in any appreciable quantity and to a large extent water must be used as it runs down the river, is not a correct statement because it does not conform with the facts.

Q. Will you please state what in your opinion are the essential factors to be considered in connection with the utilization of stored water in relation to a "run-of-river" type development or a "storage" type development?

A. The essential consideration of a storage development is the amount of stored water available to supplement the normal flow of the river during periods of minimum flow or maximum loads, or a coincidence of those two factors. While the usable storage behind both dams is only equivalent to the [16655] full power house draft of Safe Harbor during a twenty-four hour period, the essential and important facts are that the usable storage behind both dams is greater than the minimum flow of the river for a seven-day period. When such usable storage is used to supplement the minimum flow of the river, it greatly enhances the capacity value of these hydro plants.

Q. Do you insist that Holtwood and Safe Harbor are not run-of-river plants?

A. I have frequently referred to them as such, but in connection with the capacity value of the hydro plants at Holtwood and Safe Harbor in this case, it is important to recognize the distinction between a run-of-river plant without storage and a run-of-river plant with storage. The Federal Power Commission, itself, properly recognized that distinction in its printed instructions relating to Schedules 2 and 16 of its F.P.C. Form 12 Report for electric power systems. Under F.P.C.'s definition, neither Holtwood nor Safe Harbor would be classified as run-of-river developments.

[16656] Q. At page 1238 Mr. Thomas stated that "for economic development such plants as Holtwood and Safe Harbor must be operated in conjunction with an adequate

supply of steam electric power which is used to firm up the hydro supply." Do you agree with that statement? A. I do not.

Q. Why do you disagree? A. His statement that steam electric power is used to firm up a hydro supply is erroneous. Supplemental steam power does not firm up a hydro supply. Rather, when such steam power is used in conjunction with or supplemental to a hydro supply, the maximum utilization can be made of the natural resources. Steam energy is necessary to supplement a hydro supply such as that at Holtwood and Safe Harbor under certain flow conditions, but I would disagree that such supplemental energy firms up the hydro resources. The load shape alone determines the capacity value of a hydro development.

Q. Then, in your opinion, Baltimore Company has not [16657] installed steam capacity to firm up the hydro resources of the Susquehanna River? A. No, neither Baltimore Company nor anyone else has installed steam capacity to firm up these hydro plants; rather, they have been firmed up by the growth of the peak portion of the system load on which they were operating in part or in whole.

Q. Has Penn Water ever considered providing additional steam capacity itself at Holtwood to provide such supplemental supply? A. Yes, it has on several occasions within the last ten years.

Q. Would such additional steam capacity, if provided by Penn Water at Holtwood, be a duplication of existing steam electric plants operated by Penn Water's customers? A. Not necessarily. It could have and may now provide additional steam capacity to meet the growing needs of its customer companies.

Q. Would the location of additional steam capacity at Holtwood be at an economic disadvantage because of its distance from the load centers? A. No, as a matter of fact, additional steam capacity, if provided at Holtwood,

would be as close or closer to the load centers of its Pennsylvania customers than the presently-existing steam plants installed on the system of these [16658] customers.

Q. Has Penn Water relied almost entirely on the steam plants of Consolidated Gas Electric Light and Power Company of Baltimore to firm up its hydro capacity? A. No, for the reason just given, these steam plants have not firmed up Penn Water's hydro capacity. The Penn Water and Safe Harbor capacity has been firmed up and is being firmed up on the system loads themselves. However, for the reasons given in my re-direct testimony, Penn Water has been obtaining a large part of its supplemental supply from Baltimore Company merely because the incremental cost of such supplemental steam supply was slightly lower than the cost of procuring ~~such~~ supplemental supply from its northern customers. However, this situation may have been temporary and is very likely to reverse in the near future with the completion of additional highly-efficient and economical generating capacity on the systems of the northern companies.

. . .

[16660] Q. Could Penn Water depend on interchange energy arrangements for obtaining the necessary supplemental steam energy to meet its firm power obligations in conjunction with the hydro supply from the Holtwood and Safe Harbor developments? A. Yes, its present contracts covering interchange energy and other interchange services are sufficiently [16661] flexible, yet comprehensive, and its operations under those contracts are so well understood by all parties, that Penn Water could depend on such interchange energy arrangements to provide for the necessary supplemental energy even though Baltimore, for any reason at all, was unable or unwilling to provide such supplemental supply during those times when it was more economical to obtain such supply from Baltimore.

Q. At page 1252, line 22, Mr. Thomas testified as follows: "I am confident that Holtwood Company could not

and would not depend on interchange energy for firming up its hydro supply. Putting it in another way, Holtwood Company would not and could not purchase interchange energy on a when, as and if basis and resell it as firm power." Does Holtwood Company purchase interchange on a when, as and if basis and resell it as firm power?
A. Yes, it does.

Q. In your opinion is there anything unusual or improper in such procedure? A. No. Penn Water is always in a position to supply its firm power commitments from its own resources in any emergency created by a temporary failure of the supply which Mr. Thomas characterizes as "when, as and if."

Q. Has the Federal Power Commission ever given recognition to such use of supplemental energy? A. Yes. F.P.C. in its instructions relating to Schedule [16662] 2 of its Form 12 Annual Power System Statement provides that "Contracts for purchase or interchange of off-peak energy also may be taken into account" in presenting "a realistic picture of the potential energy and capacity of system hydroelectric plants."

Q. From where does Penn Water obtain most of the supplementary supply which is needed and which we might speak of as available on a "when, as and if basis"? A. From Baltimore Company, but only because under present conditions it is the most economical source.

Q. Is Baltimore Company obligated to furnish this service? A. Only up to the limit of its available generating capacity located in plants in operation at the time.

Q. That is in accordance with Article 6, Item H, is it not? A. Yes.

Q. Does Baltimore Company at times obtain energy from others for supply to Penn Water and Safe Harbor? A. Yes, from Potomac Electric Power Company.

Q. Is such energy received by Baltimore Company from Washington Company as firm or as interchange energy? A. Interchange energy.

Q. So Baltimore, itself, is then using interchange energy from Potomac Electric Power Company to supply what Mr. [16663] Thomas would have you consider as a firm service from Baltimore to Holtwood Company. Is that right? A. Yes, except that I do not agree with Mr. Thomas that backfeed services under Article 6 are or should be considered in the nature of a firm service.

Q. Do other utilities make use of interchange purchases on a "when, as and if" basis to supply their "firm service obligations"? A. Yes, frequently. Where a utility is in a position to reduce its operating expense by interchange purchases, it follows this practice.

Q. Is it always economy that dictates the use of interchange for such purpose? A. No, it is sometimes necessity which dictates such use of interchange to supplement deficiencies in the resources available to the purchaser of the interchange. Such interchange transactions are made under the emergency provisions of the interchange agreements.

Q. Does Baltimore Company purchase large amounts of interchange energy on a "when, as and if" basis from Washington Company? A. Yes, it does.

Q. And, is such supplemental energy at times used to supply its own system load requirements? A. Yes.

[16664] Q. Are the hydro companies taking any unusual risks when they depend on "when, as and if" available energy to meet their firm obligations? A. No. It is inconceivable that the interconnected companies would be deficient in energy during the off-peak hours and that is the only time when the hydro companies are interested in purchasing economy interchange as supplemental energy.

Q. Are the hydro companies contributing to the overall system economy when they use "when, as and if" available energy to meet their firm obligations? A. Yes, they are. Optimum use of the hydro capacity and energy requires peaked operation in low-flow periods as was shown in Exhibit 8. There is certainly no need or justification for

making a firm arrangement for a service that can satisfactorily and economically be obtained as interchange. Such arrangement would simply increase the cost of the firm power services and such increased costs would then have to be passed on to the customers of Penn Water and Safe Harbor.

Q. Is it necessary for any of Penn Water's and Safe Harbor's customers, including Baltimore Company, to install capacity in addition to that required for their own purposes, to enable them to supply the backfeed required by Penn Water and Safe Harbor? A. No, it is not.

[16665] Q. Is it necessary that any one of your customers be in a position to provide you all the backfeed you may from time to time require? A. No, it is not. It is only necessary that we obtain such backfeed from all our customers collectively.

Q. Are there wide variations in the annual amounts of hydro energy obtainable from the Susquehanna River from the [16666] Holtwood and Safe Harbor hydro plants? A. Yes, the river flow varies quite widely, and the energy obtainable is generally in direct proportion. We recently experienced in the year 1945 an excess generation of about 500 million kilowatt hours, which is approximately 30% in excess of the expected generation for an average flow year. On the other hand during the year 1941 there was a deficiency in generation, that is, generation less than expected on an average flow year of about 400 million kilowatt hours, which is about 25% less than normal generation. The river flow experienced in 1946 was very near to the expected average flow.

Q. When the 1931 Power Agreements between Penn Water, Safe Harbor and Baltimore were negotiated, and I am referring to the contracts identified as Items E, F & G and H and I, was it then recognized that there would be fluctuations in the annual amount of energy obtainable from

these hydro plants from year to year? A. Yes, it was.

Q. And was it expected that the full effect of these energy variations would affect Baltimore Company only?

A. Yes.

Q. Does Baltimore Company now experience the full effect of such fluctuations in electric services? A. No, not entirely, because the M.E. contract, [16667] Exhibit 72, provides that M.E.Co. shall receive under that contract amounts of energy varying to a large extent with river flow. So that to the extent that M.E.Co.'s supply fluctuates with river flow, Baltimore Company's supply is less affected by such fluctuations.

Q. Did Baltimore Company appreciate and recognize that its operating expenses would similarly fluctuate with river flow because of the varying amounts of steam generation necessary? A. Yes, it did.

Q. Were the payments to be made by Baltimore Company under the contracts identified as E, F & G and H and I established in recognition that there would be such fluctuations? A. Yes, they were so established and in particular Exhibit A of Item H clearly shows that an adjustment was made to correct 1930 revenues for average flow conditions as a basis for future payments.

Q. Mr. Spaulding, is it your opinion that the usable capacity from the Holtwood and Safe Harbor hydro plants varies from year to year as widely as the variation in energy generation you have just referred to? A. No, indeed, there is nowhere near the variation in usable capacity. In fact, the variations in river flow from year to year have a very small effect on the use made of [16668] the hydro capacity available to Baltimore Company. Certainly, the availability of capacity on a twenty-four hour basis would vary, but this is not a measure of use or availability of capacity for system operations. When looked at from the viewpoint of use made of capacity, I find the variation from year to year only a fraction of the variation in hydro energy.

[16669] Q. At page 1255, Mr. Thomas testified that "Baltimore Company assumes definite risks and obligations which are not undertaken by the Pennsylvania customers of the Holtwood Company." Is that statement correct?

A. Baltimore Company may have assumed certain obligations under our contract, identified as Items H and I, not undertaken by the Pennsylvania customers, but any risks and obligations there may have been are not a burden on Baltimore Company today. It must also be recognized that Baltimore Company then obtained and today still has available to it very definite advantages and benefits not available to the other customers of Penn Water.

Q. At the same page, Mr. Thomas also stated that "as the residual receiver, the contractual supplier of backfeed steam electric energy, the underwriter of the system operations, the risktaker and the contractual guarantor of Holtwood Company's earnings, Baltimore Company is not comparable to the Pennsylvania customers." Do you agree with that statement?

A. Baltimore Company is the residual receiver—both companies understood that at the time the contract was made. There are advantages to Baltimore Company in such a position. Baltimore Company is one of several suppliers of supplemental energy, but I do not agree that as a supplier it is in any different position, in fact, than any of the other several [16670] interchange customers of Penn Water; and there is no actual burden to Baltimore Company in so doing. Rather, Baltimore Company, in addition to obtaining the savings resulting from such interchange transactions, obtains all of the economic advantages of the coordinated operations of the Penn Water-Safe Harbor and Baltimore systems; advantages that are not available to the other customers of Penn Water. I do not agree that Baltimore Company is the risktaker and the contractual guarantor of Penn Water's earnings.

Q. Why do you state that you do not agree that Baltimore Company is the risktaker and the contractual guarantor of Penn Water's earnings?

A. First, because

Article VII of the 1931 Supplemental Agreement, identified as Item H, largely relieves Baltimore Company of such risks. Second, because through the several other terms of this contract, certain other protections are available to Baltimore and which it has exercised. Third, because Baltimore Company has recourse to regulatory authority as to the reasonableness of the charges for the services received.

Q. Has Baltimore Company ever been relieved of a portion of the payments provided for under the 1931 Agreement? A. Yes, it has.

Q. In what connection? A. As the result of the 1936 flood, Baltimore Company [16671] was relieved of certain payments and other obligations.

Q. By how much was Baltimore Company's payments reduced in 1936? A. Baltimore Company received a credit of \$29,873 as compensation for its own cost of producing or purchasing the replacement of electric services lost. Penn Water incurred maintenance expenses, directly or indirectly, related to the flood, of \$125,493 which were credited to the charges otherwise payable by Baltimore Company. Penn Water also made net additions to its plant, based on its experience during the flood as a precautionary measure to protect future services, amounting to approximately \$483,000 which were subsequently excluded from the "cost of net additions" used in the computation of annual payments thereafter.

Q. You stated that any risks and obligations there may have been, are not a burden to Baltimore Company today. Will you explain this statement? A. In my opinion a risk or an obligation is only of significance when there is a direct cost or a hazard of cost or loss relating thereto. Penn Water's stockholders alone are affected by the hazards as respects property loss, loss in revenue, reduction in return, and the hazards of extraordinary or unusual costs incurred.

Q. Will you explain? A. Penn Water's stockholders, for example, assumed [16672] the costs and losses in

revenue resulting from the 1936 flood. Penn Water's stockholders alone have the risks and hazards to property and loss in revenue resulting from war, strikes, major catastrophes and any other causes of like nature beyond the control of either party, and I am here referring to Article VII of the contract identified as Item H. Penn Water's stockholders alone have the risks and hazards from competition including Government hydro developments on the Susquehanna River or in the general geographic area and from any other forms of government-subsidized power developments. Penn Water's stockholders have the risks and hazards of costs or loss in revenue that may result from damage to the transmission lines between Safe Harbor and Baltimore, and I am here referring to the first paragraph of Article VII of the contract identified as Items E, F and G.

Q. What burdens does Baltimore Company have under these power contracts? A. Any burden that Baltimore Company may have, results from fluctuations in river flow. However, such additional costs in the low flow years are substantially averaged out over a period of years with the additional benefits obtained in high flow years so that any detrimental effect there may be is limited to the disturbances caused in the regularity of Baltimore Company's operating expenses and resultant earnings from year to year, and this fluctuation of earnings could [16673] be eliminated through the use of an equalization reserve. From a long range point of view, even without such equalization reserve, the resultant effect is negligible. Furthermore, the effects of any such fluctuations are in large part mitigated through Federal and State income taxes whereby the governments assume a portion of the burden of equalizing operating expense fluctuations through income taxes.

Q. Have any early risks and obligations that Baltimore may have had, disappeared? A. Yes. Whatever may have been the risks or burdens in the past affecting Baltimore Company as a special customer through the present form

of contract, the economic changes in the past decade have made Penn Water's hydroelectric services more valuable in relation to the steam sources of supply available to Baltimore Company. Baltimore Company has already taken steps in an attempt to limit the present hydro supply to the Pennsylvania customers, in order that such hydro supply may be profitably available for Baltimore Company's own use. The effects of a further increase in the level of labor costs and coal prices will affect steam production costs relatively more than hydro production costs because of the relatively small amount of labor required for the hydro service. The trend of taxes appears to be downward. All of these factors tend to make the hydro service more attractive and desirable to Baltimore Company.

[16674] Q. What steps has Baltimore Company taken to limit the present hydro supply to the Pennsylvania customers?

A. During the past six months, Baltimore Company has presented requests to Penn Water at conferences and in writing to terminate or limit the services supplied Metropolitan Edison Company, Pennsylvania Power & Light Company and the Coatesville Division of Philadelphia Electric Company, under the respective firm power contracts with such companies.

MR. SPARKS: I would like to have a group of letters between Penn Water and Baltimore Company marked for identification.

(The letters referred to were marked Exhibit No. 370 for Identification.)

By MR. SPARKS:

Q. Are these the letters you referred to with certain related correspondence? A. Yes.

Q. In the event that the firm power contracts with Metropolitan Edison Company, Pennsylvania Power & Light Company and Philadelphia Electric Company, are terminated, for any reason, would the transmission facilities now being used to supply these Pennsylvania cus-

tomers cease to be of use? A. No. None of such transmission facilities would cease to be used. Even in such eventuality as you mentioned, all of these transmission facilities would continue to be used [16675] and useful for interchange services between the several interconnected companies.

Q. Can you now foresee the possibility of these facilities being superseded by other higher voltage facilities?

A. No. Even though a 220 Kv. interconnection were provided between Safe Harbor and the existing 220 Kv. network of these northern companies, such new interconnection facilities would not materially reduce the usefulness of the existing facilities.

[16676] Q. In considering the costs of service from a steam electric generating plant, what general classifications of those costs can usually be made? A. One can and does usually class certain of the plant costs as fixed costs and the balance as variable costs.

Q. Is this classification of costs as between fixed and variable a rigid one? A. No, to a certain extent it must be a matter of informed judgment.

Q. What is the purpose of making a separation of variable and fixed costs? A. Generally for use in economic studies necessary for system planning and for operations accounting. The fixed costs may or may not all be considered to be capacity costs and certain variable costs may not all be considered to be energy costs.

Q. You have referred to certain costs being related to capacity and certain costs being related to energy. Would you make any allocation for costs relating to other attributes of electric service, such as spinning reserve, power factor cooperation, voltage and frequency? A. It is not generally necessary to make a specific allocation of the costs for those other attributes, although there are very definite costs incurred in supplying them. However, if the costs of such special services were to be [16677] considered

in determining a rate for such services, it would then be necessary to segregate them.

Q. Can an analogous treatment be applied in the determination of hydroelectric plant costs? A. Yes. It is similarly necessary to consider the various services furnished from a hydroelectric development, the relative amounts thereof, and to consider the investment costs, as well as the operating costs incurred in providing those services. Not the least consideration is the purpose for which the hydro plant was constructed, the relative demands for use and uses made of these several services today. A hydro plant may be used to provide peaking capacity with a very small amount of annual energy, yet this plant may be continually used for spinning reserve, voltage and frequency regulation, and power factor regulation. For such a plant most of the fixed costs incurred should properly be considered as capacity costs. On the other hand, hydroelectric plants such as those at Niagara Falls and at Beauharnois on the St. Lawrence River, near Montreal, have almost a 100 percent use factor, i. e., generators are fully loaded throughout the year, and it would, in my opinion, not be proper to consider all of the fixed costs of those plants as capacity costs. If, however, a hydro plant was economically provided in conjunction with a flood storage project where the plant was only operative at times of flood, the fixed [16678] charges would all be allocable as energy costs.

Q. In addition to the purpose for which a hydro plant is built, or is being used, are there any other considerations which make it improper to use all fixed costs as capacity costs? A. Yes. Generally I have in mind that certain fixed costs are incurred specifically in connection with the production of energy and contribute nothing to the amount of capacity available.

Q. Can you illustrate this situation? A. There are many hydro projects in the United States with dams several hundred feet in height built for the purpose of creating large storage reservoirs which are used for sea-

sonal drawdown. The maximum drawdown of the reservoir level at such a plant may be as much as 100 feet which occurs at the end of the low water season of the year which may also be the peak load season. This fact, and perhaps other considerations, frequently lead to installation of generator capacities sufficient to utilize the full turbine output at operating heads experienced under such drawdown conditions. In other words, the full electric capacity of the plant is actually used when the reservoir is at or near minimum drawdown elevation. For such projects the fixed costs chargeable to capacity might properly be the approximate costs necessary for a dam much smaller than that provided for maintaining [16679] adequate storage capacity, and the difference in the cost of the two dams together with differences in costs for flowage basin property, highways, and bridge relocations may be a substantial part of the total project cost incurred not for the use to be made of capacity but for the use to be made of the energy services.

Q. Can you give a similar analogy for medium or low head plants, such as those at Holtwood and Safe Harbor?

A. Yes. When the Safe Harbor plant was under consideration and economic studies were being made to support its justification, no serious thought was given to the installation of the same amount of capacity at an extended power house at Holtwood, although capacity could have been provided there equal to that installed at the Safe Harbor plant for a fraction of the cost of the Safe Harbor project. The same amount of spinning reserve, voltage regulation and power factor regulation could also have been so obtained, but the amount of energy available from such capacity installation at Holtwood would have been less than one-half of that obtainable from the Safe Harbor development.

Q. Would the difference in cost between the Safe Harbor project and installation of the same amount of capacity at Holtwood be any measure of the cost incurred for energy at the present Safe Harbor plant? A. I think it might properly be so considered, but I [16680] did not approach

it from this point of view. I did, however, recognize the fact that the amount of capacity provided at Safe Harbor was not provided for capacity alone, rather it was provided to obtain the relative amounts of capacity, energy and the other attributes of electric service as were then expected to be needed by and useful to its several customers. To ignore these factors in any cost allocation is not being realistic.

Q. On page 11182 of the record, Mr. Davis testified that all of the investment costs associated with the steam plant are costs which have a function of providing capacity. Is it a fact that all of the investment costs associated with the Holtwood steam plant have the function of providing capacity? A. Certainly not. I have in mind particularly the investment in boiler plant, coal preparation plant and coal recovery facilities, and possibly also the investment in circulating water tunnels, pumping capacity and condenser capacity, where a very much smaller cost would have been necessary had it not been desired that the Holtwood plant operate for long continuous periods at maximum plant output, i e., on base load. Many steam plants in the country today are designed and built with undersized boiler plants because it was recognized that the boilers would only be loaded to full capacity, or overloaded, for a relatively few hours each month. Certainly [16681] it is not a fact that all of Holtwood steam plant investment was made to provide capacity.

Q. Mr. Davis showed in his Exhibit 64, Table 5, line 26, a figure of \$19.22 per kilowatt and a figure of 1.43 mills per kilowatt hour. In your opinion are these figures representative of a realistic cost per kilowatt and per kilowatt hour of the services supplied by Penn Water? A. Without agreeing with his method of computing capacity for the purpose of deriving a cost per kilowatt, and after adjustment for the errors in his determination of energy used in deriving his cost per kilowatt hour, in my opinion his cost per kilowatt and cost per kilowatt hour are entirely unrealistic.

Q. Are all of the costs of Safe Harbor incurred in connection with the rendering of electric services to the Pennsylvania customers, including the services rendered to the Pennsylvania Railroad by Safe Harbor, included by Mr. Davis in his Exhibit 64? A. No, they are not.

Q. What costs, if any, of Safe Harbor were included by Mr. Davis in his Exhibit 64? A. Only those costs of Safe Harbor represented by an assumed bill rendered to Penn Water were included by Mr. Davis in line 2 of Table IV of Exhibit 64. Mr. Davis did not use the actual total costs of Safe Harbor in computing [16682] such assumed bill, but rather a much reduced cost based on a lower rate of return than provided under that contract.

Q. Were the costs used by Mr. Davis in his Table IV of Exhibit 64 related to the services actually rendered? A. No, they were not. The costs used by Mr. Davis were taken to be only one-third of such total assumed costs of Safe Harbor, but the services rendered by Safe Harbor to the Pennsylvania customers jointly with Penn Water and to the Railroad jointly with Penn Water and Baltimore were greatly in excess of one-third of the total electric services rendered by Safe Harbor in that year. As a result the costs incurred by Safe Harbor in rendering services to Penn Water and to its Pennsylvania customers were greatly in excess of the one-third of Safe Harbor's assumed costs.

Q. At page 10847, Mr. Davis testified that Baltimore Company is standing back of the peaks of the firm power obligations of Penn Water and Safe Harbor to others. Is this an accurate statement of the facts? A. It is not. Baltimore Company has no obligation in connection with any of the firm power obligations of Penn Water and Safe Harbor to their Pennsylvania customers. Baltimore Company does have an obligation to the Pennsylvania Railroad jointly with Penn Water and Safe Harbor. Baltimore Company stands back of nothing with respect to Penn Water and Safe Harbor's obligations to their Pennsylvania customers, [16683] except its agreement to provide back-

feed energy as supplemental energy to Penn Water during the hours when Baltimore Company can do so from generating units in plants that are otherwise operating, that is, that are otherwise required by Baltimore for its own uses.

Q. At page 11100 of the record, Mr. Davis testified with respect to the use of energy generated at Safe Harbor and Holtwood by the installed capacity available in excess of what he determined to be the dependable capacity of the Holtwood and Safe Harbor plants, and further stated that such energy was used by all of the customers just as any other energy. Who in fact uses such energy? A. Assuming first that there is energy generated from capacity installed in excess of the dependable capacity of these plants, such energy is, in fact, used either for delivery to Baltimore Company or for delivery in connection with interchange transactions.

Q. Then, none of such excess energy is used in connection with the firm power obligations of Penn Water and Safe Harbor to their Pennsylvania customers? A. That is correct.

Q. Is there any justification for eliminating the costs associated with construction work in progress and plant held for future use in connection with any cost allocation of the services rendered by Penn Water? [16684] A. No, there is not.

Q. Why not? A. Most of the properties and facilities, the costs of which are included in construction work in progress, are or shortly will be in use. Any cost allocation made should relate to the actual costs for service now and in the near future. Certain investments now being accumulated in connection with contemplated projects are classified as property held for future use. We are acquiring, as opportunity presents, the necessary right-of-way for transmission lines under a definite plan of use. Investments are also being made for future use in connection with an additional hydroelectric development. By the very nature of such latter plans, it is necessary for this company

to acquire lands and other property over a period of many years. To do otherwise would naturally increase the purchase price of such properties.

Q. In Table III-a of Exhibit 64, Mr. Davis eliminated for cost allocation purposes certain expenses incurred by Penn Water for administration and general expense. What are the facts in respect to this expense for the year 1944?

A. Referring to Exhibit 18, being Penn Water's bill to Baltimore Company for services rendered under contract identified as Items H and I for the year 1944, there is an item (x) entitled "Miscellaneous Credits" in an amount of \$9,703.62. This amount was treated as a deduction in the [16685] determination of the annual charges to Baltimore Company. This is the amount that Mr. Davis used as a reduction to Penn Water's expense in his Table III-a of Exhibit 64. The amount so treated in the 1944 bill as rendered, was made up of three items: a portion of the directors' fees, a portion of the costs incurred for use and occupancy insurance, and the salary of one employee.

These items of general expense were excluded from the power bill by agreement between the parties and for the following reasons:

Penn Water's directors' fees were in that year greater than those paid by Baltimore Company to its own directors, and Baltimore Company urged us to deduct that portion of such expenses in excess of the amounts Baltimore Company paid to each of its directors. Penn Water agreed in such connection to deduct from the bill an amount of \$4,065 for the year 1944, but without agreeing that its fees paid to its directors were unreasonable or were not proper operating expenses. Certain use and occupancy insurance relating to loss of revenue from fire and sabotage, was carried by Safe Harbor and Penn Water during the war years. Such expenses were recognized by Baltimore Company as proper operating expenses, but Baltimore Company felt that such insurance was in part a protection to Penn Water against loss of revenue under the general catastrophe

clauses of the respective contracts E, [16686] F and G and H and I. Penn Water agreed to deduct from the annual bill for the year 1944 an amount of \$3,211.87, being one-half of the costs of such U. and O. fire and sabotage insurance carried by Safe Harbor Company plus one-half of only the U. and O. sabotage insurance carried by Penn Water, but Penn Water did not agree that such insurance costs were not proper operating expenses. Penn Water further agreed to deduct from the annual bill an amount of \$2,426.75, relating to the salary and expenses of one of its employees, but did not agree that such expenses were not proper operating expenses.

Q. What were the amounts included in the item entitled "Miscellaneous Credits" being Item (x) of the power bills for years 1945 and 1946? A. In the year 1945 the amount in Item (x) which was treated as a deduction in the determination of the annual charges to Baltimore Company was \$11,238.38 and in the year 1946 the amount was \$15,283.28. The differences in the three years, 1944, 1945 and 1946, were largely the result of an increase in amount of expenses for directors' fees so deducted and a decrease in the cost of use and occupancy insurance for 1946 due to the cancellation of certain wartime insurance.

Q. In Exhibit 64, Table IV at line 2, Mr. Davis shows as Penn Water's payment to Safe Harbor Company an amount of [16687] \$992,535. By reference to Exhibit 17 it would appear that Safe Harbor's bill to Penn Water for the year 1944 was \$1,214,553.53. What was the actual amount billed by Safe Harbor to Penn Water and paid by Penn Water under Items E, F and G in 1944? A. \$1,214,553.53.

Q. Were such charges, made by Safe Harbor to Penn Water, provided for in a contract on file with the Pennsylvania Public Utility Commission? A. Yes. The contracts identified as E, F and G in these proceedings have been filed with Pennsylvania Public Utility Commission by Safe Harbor Company and designated by that Commis-

sion as Safe Harbor Tariff No. 1, including Supplement No. 1 thereto. This same contract has also been filed with the Pennsylvania Public Utility Commission by Penn Water and designated by that Commission as Pennsylvania Water & Power Company Tariff No. 5, including Supplement No. 1.

Q. Has the Pennsylvania Public Utility Commission ordered Safe Harbor Water Power Corporation to reduce its charges to Penn Water for the year 1944 or for any subsequent year? A. It has not.

Q. Beginning at page 11233 of the record, Mr. Davis testified with respect to the actual capacity available from the Safe Harbor-Holtwood system at the times of various system peaks.

[16688] Have you prepared a tabulation showing the actual capacity available and in use for the Safe Harbor and Holtwood power developments for the years 1944, 1945 and 1946, at the time of the Area 6 annual system peak, and at the time of Safe Harbor-Penn Water system peak? A. Yes, I have.

MR. SPARKS: I ask that this tabulation be identified as Exhibit No. 371.

(The document was marked Exhibit No. 371 for Identification.)

By MR. SPARKS:

Q. Is this the tabulation you have prepared? A. Yes.

Q. What other information is shown on this exhibit? A. I have also shown the amount of capacity available and in use at the Holtwood hydro plant, at the Holtwood steam plant, and at the Safe Harbor hydro plant at the time of the various system peaks shown. There is also shown on the lower portion of the exhibit the maximum annual capacity available and in use at the Holtwood power development and at the Safe Harbor development for each year,

for comparison with the amounts of capacity available at the time of the system peaks.

Q. Have you also prepared a tabulation showing the actual firm power demands of the Pennsylvania customers on [16689] Penn Water-Safe Harbor system for the years 1944, 1945 and 1946, at the time of the Area 6 annual system peak, at the time of the Safe Harbor-Penn Water system peak, and at the time of maximum output from the Holtwood power development, together with the maximum requirement of each Pennsylvania customer including the Pennsylvania Railroad requirements on the Divisions of the Railroad's electrification normally supplied by Penn Water, Safe Harbor and Baltimore Company? A. Yes, I have.

MR. SPARKS: I ask that this tabulation be identified as Exhibit 372.

(The document was marked Exhibit No. 372 for Identification.)

By MR. SPARKS:

Q. Beginning at page 11236, Mr. Davis testified with respect to statements in the FPC Form No. 12 "Power System Statement" for 1945, filed by Consolidated Gas, Electric Light and Power Company of Baltimore as the "Pool" report which purports to include data obtained by them respecting the operations of the power systems of Potomac Electric Power Company, Penn Water and Safe Harbor, and the power facilities of the Bethlehem Steel Company in Baltimore. Is all of the data relating to the operations of the Safe Harbor-Penn Water system shown by them in this 1945 Pool Report, shown in the manner supplied to Baltimore Company by Penn Water and Safe [16690] Harbor? A. No, it is not.

Q. In what respect does this "Pool" report filed by Baltimore Company include data different from the information reported or supplied by Penn Water and Safe Harbor to Baltimore Company for the purpose of prepar-

ing such "Pool" report? A. The amounts shown in Baltimore Company's "Pool" report to the Federal Power Commission, Form 12, for the dependable capacity of the Holtwood and Safe Harbor plants are different from the information supplied to Baltimore Company. The dependable hydro capacity of the Safe Harbor and Holtwood plants reported in this "Pool" report by Baltimore Company is not the information supplied to them in writing for such purpose, is incorrect in my opinion, and this fact was called to Baltimore Company's attention in writing at the time.

MR. SPARKS: I ask that the copies of letters of May 28, June 3 and June 5, 1946, be marked as Exhibit 373.

(The letters were marked Exhibit No. 373 for Identification.)

By MR. SPARKS:

Q. Are the copies of the letters in Exhibit 373 the correspondence you have just referred to? A. They are.

Q. Beginning at line 15 of page 1192 of the record, [16691] Mr. Davis testified that the capacity available for Baltimore Company from Penn Water and Safe Harbor is not a measured quantity. Is it possible to measure and determine the maximum demands by Baltimore Company on the Holtwood-Safe Harbor system? A. Yes.

Q. When generally do the maximum demands occur? A. During those higher river flow periods of the year when the hydro capacity is fully loaded and the load demands of Penn Water's and Safe Harbor's other customers are off peak. While such occasions may occur during the early morning hours, the demands of Baltimore Company on the Penn Water-Safe Harbor system during many other periods of the same days and at other times during the year are only a few thousand Kw. less.

Q. Is it more difficult to determine Baltimore Company's maximum demands than it is to determine the maximum demands of the Pennsylvania firm power customers?

A. It is no more difficult to determine such demands because they are measurable quantities.

Q. Are such metered maximum demands the full measure of the capacity services rendered to Baltimore Company? A. No.

Q. What other factual data must be considered? A. It is necessary to determine from operating records, [16692] the additional amounts of capacity and spinning reserve that was available. Such additional capacity services are only available to the other customers of Penn Water and Safe Harbor on an interchange basis.

Q. Will you explain the use made by Baltimore of such maximum demands and of the other capacity services in meeting its own system load requirements? A. First, Baltimore Company uses such maximum demands of power and energy to carry its own peak load requirements in the manner described, both in my Exhibit No. 8 and by Mr. Thomas in his Exhibit No. 69; secondly, the dependence generally on the Penn Water-Safe Harbor capacity for reserve capacity in part as spinning reserve and in part as cold reserve, and third, during those periods of average river flow when Baltimore's steam capacity is taken out of service for inspection and maintenance.

Q. Does Baltimore regularly depend on Penn Water and Safe Harbor for capacity services, when it is necessary to remove its steam generating equipment from service for maintenance work? A. Yes, that has always been a recognized use of Penn Water and Safe Harbor capacity both in the system planning and in preparing advance schedules of the capacity requirements of Baltimore Company.

Q. In what manner does Baltimore plan in advance to [16693] make use of Penn Water and Safe Harbor capacity in connection with its steam plant maintenance? A. The operating departments of Baltimore Company, Potomac Electric Power Company, Penn Water and Safe Harbor each year collaborate in preparing a maintenance

schedule covering all outages of major steam generating plant equipment that may need be scheduled for routine overhaul, inspection or repair. This schedule is first prepared in the third quarter of the year for the following year and is revised from time to time, as necessary, due to changing river flow conditions or to adjust for interruptions caused by changes in operation or in equipment conditions that occur throughout the year.

MR. SPARKS: I ask that these three steam plant maintenance schedules be identified as Exhibit 374.

(The documents referred to were marked Exhibit No. 374 for Identification.)

By MR. SPARKS:

Q. Are the sheets which have just been identified as Exhibit 374 several of the recent maintenance schedules prepared by Baltimore Company just referred to by you?

A. Yes, they are the steam maintenance schedules as originally prepared by Baltimore Company in collaboration with the other operating people mentioned. The heavy dark line on each chart is the original prearranged outage schedule [16694] of steam plant facilities affecting capacity. There is included in Exhibit 374 such charts for the years 1944, 1945 and 1946. The original schedules were revised from time to time during the year and the hatched areas are the resultant changes in the original outage schedules. However, it should be pointed out that the actual capacities shown as scheduled out of service are exclusive of forced outages occurring during the same periods which at times were as much as 100,000 Kw. greater than the amounts shown on this exhibit. I desire to point out that in the preparation of the original maintenance schedules and the revisions made thereto, it was necessary to arrange for such scheduled outages at times when there would be the necessary capacity margins available on these systems. The capacity margin available for such outages in turn is related to expected river flow conditions. Con-

sideration was and is given, not only to the load carrying capacity of the hydro plants with most adverse river flows, but to the capacity margins available on the system with river flows for each month that can be expected to occur at least 90 percent and 75 percent of the time.

Q. Can the river flows be predicted sufficiently far in advance for the operating people to arrange for the outages of steam capacity for a two-week period? A. Yes. It is the regular practice of the hydro companies' hydrographic observer to maintain a running estimate [16695] of river flow for a seven-day period and, in collaboration with the weather bureau, to predict river flows for a two weeks' period. We are also able to predict, based on ground water observations, the assured flow that can be experienced in the absence of any rainfall for periods of four to six weeks in advance. However, we are concerned in scheduling steam capacity outages, only with possible reductions in river flow during the time a large sized steam unit will be out of service for maintenance and it is most infrequent that we experience any very sudden drop in river flow that cannot be forecast with reasonable accuracy two weeks in advance.

Q. Is the two weeks' estimate of river flow sufficient for scheduling the outage of steam generating capacity? A. Yes, it is. The maximum outages of steam generating equipment shown on Exhibit 374 are the result of scheduling outages of several generating units or boilers at the same time. One of such units may be scheduled out of service for overhaul for a period of from four to six weeks, but certain of the other equipment scheduled for outage during the same period can always be returned to service on one week's or shorter notice if required due to forced outage of other steam capacity. This is the reason that it is continuously possible to take advantage of river flows in excess of the most adverse conditions for a large portion of the scheduled outages of steam capacity on this interconnected [16696] system.

MR. SPARKS: I ask that this be identified as Exhibit 375.

(The document was thereupon marked Exhibit No. 375 for Identification.)

By MR. SPARKS:

Q. Are the diagrams shown in Exhibit 375 the underlying data used by the companies in the preparation of the schedules incorporated in Exhibit 374? A. They are.

Q. And, it is this background information which supported your statement that the maximum outages of steam generating equipment are the result of scheduling outages of several generating units or boilers at the same time? A. That is correct.

Q. Will you indicate two examples from Exhibit 374 when actual outage of steam generating capacity was considerably greater than would have been possible had most adverse river flows been experienced? A. During January, 1944, there was actually 82,000 kw. of steam generating capacity out for maintenance. With most adverse river flow the desired capacity margin would not have permitted any outage of steam capacity during this period. Again during the first part of January, 1945, there was actually 96,000 kw. capacity out for maintenance while, [16697] had minimum river flows been experienced, the capacity margin as shown would indicate that such outages would have been limited to 39,000 kw., assuming no forced outages of steam capacity.

Q. Is there also similar coordination between the utility companies operating in FPC Area 6 and the northern customers of Penn Water and Safe Harbor in their scheduling of steam generating equipment outages? A. Yes, all of the companies on the interconnected system along the eastern seaboard between the Hudson and Potomac Rivers coordinate their steam plant maintenance schedules to a very large extent. It was largely because of this fact that the unprecedented war loads were carried and still

permit all essential maintenance work to be carried on. This coordination of maintenance schedules is only one of the several advantages of coordinated operation and each of such interconnected companies is continually kept informed as to the actual conditions and to the forecast of the Susquehanna River flow, because it is with the regularly experienced flows in excess of most adverse conditions that have made it possible for these companies to maintain their equipment with the growth in loads experienced.

Q. Has Mr. Davis ignored these factors in his allocation of capacity? A. Yes, he has, and I want to point out that altogether [16698] too much emphasis has been laid by Mr. Davis and at times by Baltimore Company on the amounts of hydro capacity available on the system with most adverse river flows.

Q. Is the hydro dependable capacity determined for most adverse flow conditions any measure of the actual use made of the available capacity of Safe Harbor and Penn Water? A. No. The use made of the capacity of Penn Water and Safe Harbor has been greatly in excess of these so-called "most adverse flow conditions" and in my opinion such minimum value of hydro capacity is no basis for a capacity allocation or a cost allocation related thereto. It is the use made of this capacity that should be considered in this connection and not what might have been available under some abnormal condition that occurs once in fifty years. To do otherwise is to ignore the realities of the situation. Anyone looking at a graphical picture of the use made of Safe Harbor and Holtwood hydro capacity during the last three years or even of the use made of such capacity in 1941, which was one of the lowest flow years on record, can scarcely avoid the recognition of these facts.

Q. Have you prepared such a graphical picture for the years 1941, 1944, 1945 and 1946? A. Yes, I have.

MR. SPARKS: I ask that this document showing combined Holtwood-Safe Harbor daily peaks for 1941,

1944, 1945 and [16699] 1946 be marked for identification as Exhibit 376.

(The document was marked Exhibit No. 376 for Identification.)

By MR. SPARKS:

Q. Will you explain these graphs? A. The heavy dark line generally below the hatched area has been drawn to record the maximum one-hour hydro generation for each day of the year, as shown by the scale at the left, at the Safe Harbor and Holtwood plants. The hatched area shows the generation of the Holtwood steam plant on the same hour of the day. The top of the hatched area, therefore, shows the actual maximum one-hour generation used on the interconnected system either by Baltimore and Washington or by Penn Water's and Safe Harbor's Pennsylvania customers for each day of the year. Such data alone shows the extent to which Penn Water and Safe Harbor's capacity was used in carrying the load requirements of their customers.

Q. Is that the only consideration of the use made of capacity services? A. No. There is also shown on each of these charts a black dot for each day of the year which shows the total amount of capacity actually operating and used in providing capacity services at the Holtwood and Safe Harbor plants. The difference between the capacity operating and the amounts of generation is generally the amount of spinning reserve [16700] used and useful on the system as operating reserve for load swings, protection against forced outages of capacity and load estimating errors, for voltage regulation and power factor cooperation, and for frequency and tie line regulation. In addition to the amounts of operating capacity shown, there were at times certain amounts of idle capacity not running but which were counted upon as reserve capacity by Baltimore and Washington companies, thus making it unnecessary for these companies to operate banked boilers and extra generating units for reserve.

Q. Why can Baltimore, for example, count on units not operating at the hydro plants as reserve, whereas they must have steam units spinning to provide alternative reserve capacity? A. Because the hydro units can be brought

up to speed, synchronized with the load and loaded to capacity, all in a fraction of a minute, whereas the more modern steam generating units require from two to four hours to bring from standstill to full load and even the older generating units require at least an hour to make available for carrying load. In fact, if a modern unit were operating at minimum load and there was a sudden demand for its use, it would be necessary to pick up such new demand very slowly, i. e., over a period of approximately one-half hour, in contrast to the ten second time in which the same service can be obtained from a hydro [16701] unit. This operating factor is most important in the event of a forced outage of equipment.

Q. Are there any specific points which you wish to make with respect to these charts? A. Yes, the peak load on Baltimore-Washington system and on the systems of our northern companies have been and still are experienced in November and December. The charts for each year show to what extent utilization was or could have been made of the hydro capacity installed at the Holtwood and Safe Harbor plants during these system peak periods. I also desire to emphasize that during a larger part of each year Holtwood and Safe Harbor capacity in excess of 300,000 Kw. was being utilized on the interconnected system. In 1944, such capacity was utilized on two-thirds of the week days in the year (i. e. exclusive of Saturdays, Sundays and major holidays); in 1945 on over 90 percent of such days; and in 1946 on about 85 per cent of the week-days.

Q. Is the daily use of capacity a significant factor in your consideration of the capacity value of the Holtwood and Safe Harbor developments? A. Yes, it was one of the several significant factors I considered. I believe, how-

ever, a much more important consideration is the weekly use, which perhaps can best be expressed as an average of the maximum weekly use of such hydro capacity. It is a well known fact that the system [16702] load requirements vary from day to day due to temperature, cloudiness, thunderstorms, habits of the people, such as Thursday night shopping, ironing day on Tuesday, etc. It is the weekly peak system requirements which largely determine the use made of the hydro capacity. I have, therefore, had determined from the companies' operating records both the actual amount of hydro one-hour generation and the actual amount of hydro capacity operated at the Holtwood and Safe Harbor power developments on the hour of the Area 6 system peak for each week of each year. From these records, I find that the average weekly use of such hydro generation was 250,000 Kw. in 1944, 290,000 Kw. in 1945 and 272,000 Kw. in 1946, to which must be added the load carrying capacity operating at the Holtwood steam plant. From these same records, I find that the use made of the hydro capacity actually operating in part for system reserve, at the time of these weekly peaks, was 295,000 Kw. in 1944, 316,000 Kw. in 1945 and 298,000 Kw. in 1946, and which again does not include approximately 28,000 Kw. of steam capacity available at the Holtwood steam station. No one can well ignore these facts as to use of these hydro and steam capacity services by Penn Water and Safe Harbor's customers.

Q. Did these facts influence your use of the figures of 295,000 Kw. for hydro capacity and 28,000 Kw. for steam capacity in connection with the capacity values in Exhibit [16703] No. 35? A. Yes.

Q. Beginning at line 2 of page 1195, Mr. Davis testified that the 10,820 Kw. shown by him on Table VI-A of Exhibit 64, and which was later adjusted upwards as a result of errors admitted on cross-examination, should be taken to be the maximum capacity furnished during the year 1944 to Baltimore Company by Holtwood Company. Was more

than this 10,820 Kw., as later adjusted, used by Baltimore Company in the year 1944? A. There certainly was.

Q. What was the actual amount of capacity service furnished by Penn Water and Safe Harbor to Baltimore Company at the time of the interconnected system peak in the year 1944 and by interconnected system peak I mean the peak requirements of Baltimore, Washington and of the Pennsylvania customers of Penn Water and Safe Harbor and including the total requirements of the Pennsylvania Railroad supplied by these companies? A. It was 181,000 Kw. at the time of the peak load requirements of such system in 1944, which occurred at 6:00 P. M. on December 11, being the capacity service actually supplied by Penn Water and Safe Harbor to Baltimore Company at Highlandtown, Westport, Riverside and Takoma Park, Maryland.

[16704] Q. Do you make a distinction between capacity service furnished and the maximum hourly Kwh. delivered at these points? A. Yes, I do.

Q. In arriving at such amounts of capacity service, did you make an adjustment for the actual interchange transactions on those hours between Penn Water and Safe Harbor on the one hand and their Pennsylvania customers on the other? A. Yes, I did. Any interchange deliveries by Penn Water and Safe Harbor at those times could have been made available to Baltimore Company, had such capacity service been required by Baltimore Company. Such adjustment was made by adding to the actual deliveries to Baltimore Company the amounts of interchange delivery to others at that time.

Q. Have you prepared a tabulation showing the years 1944, 1945 and 1946, the actual deliveries to Baltimore at the times of those annual system peaks? A. I have.

MR. STARKS: I ask that this document be marked for identification as Exhibit 377.

(The document was marked Exhibit No. 377 for Identification.)

By MR. SPARKS:

Q. Does this exhibit also show the actual deliveries of power and energy to Baltimore at the time of the annual [16705] system peaks adjusted for interchange transactions, in the manner you have just referred to? A. Yes, it does.

Q. And does the last column in the upper portions of this exhibit show the capacity service available to Baltimore Company at the time of such annual system peaks? A. Yes, it does.

Q. Have you also shown at the bottom of this exhibit similar amounts of actual delivery and maximum amounts of capacity service to Baltimore in the years 1944, 1945 and 1946, irrespective of the time of the year and irrespective of the system loads at the time? A. I have.

Q. When you refer to the capacity service available to Baltimore Company by Penn Water and Safe Harbor at the time of such annual system peaks, are you including only the capacity available from the Holtwood and Safe Harbor power developments? A. I am.

Q. Are there other capacity services available to Baltimore from Penn Water and Safe Harbor? A. Yes, there are.

Q. What is the nature of such additional capacity service available to Baltimore from Penn Water and Safe Harbor? [16706] A. Penn Water and Safe Harbor might have been able to obtain additional energy and capacity and to have made such additional energy and capacity available to Baltimore as a result of arrangements between Penn Water and its northern customers, Metropolitan Edison, Pennsylvania Power & Light and Philadelphia Electric. However, there were no such services actually being received by Penn Water in the hours shown on Exhibit 377.

Q. Under what conditions would such additional capacity service be available from these northern customers of Penn Water, which Penn Water and Safe Harbor might have made available to Baltimore Company? A. First,

to the extent that these companies may have had additional capacity available at the time of the system peaks shown on Exhibit 377, and, second, as a result of coordinated operations between Penn Water and Safe Harbor on the one hand and these northern companies on the other.

Q. Will you please indicate what you mean by such coordinated operations?

A. When greater amounts of hydro capacity can be utilized by operating the capacity and available energy at Holtwood and Safe Harbor on the combined system loads of the utilities operating in FPC Areas 5 and 6, Penn Water and Safe Harbor supply additional interchange energy to their northern customers at the time of such combined system peak and receive [16707] interchange energy from these northern customers in the early forenoon hours and during the evening hours. Any resultant gain in the utilization of hydro capacity without any net use of available energy from such operations is available in part to Baltimore Company as a result of such coordinated operations.

Q. At line 19 of page 1195 of the record, Mr. Davis testified that the 10,820 Kw., which he later adjusted upwards on cross-examination, is comparable to the maximum annual demands of the Pennsylvania customers. Is this correct?

A. No, it is not. It is nothing but a hybrid figure that has no comparability whatsoever with the maximum annual demands of these Pennsylvania customers.

Q. Beginning at page 11350 of the record, Mr. Davis testified that he used 40 percent of the York billing demands for the year 1944 in arriving at the 9,000 Kw. firm demand on Holtwood Company, shown in line 18 of Table V-A of Exhibit 64. He described this part of the Edison Light and Power Company as the demand which Holtwood was contractually responsible for. Was Penn Water alone responsible for 9,000 Kw. demand of Edison Light and Power Company in 1944?

A. No. Penn Water and Safe Harbor acting jointly as generating companies had the operating responsibility for 40 percent of demand of

Edison Light and Power Company. That was a joint responsibility of both companies and not of Penn [16708] Water alone.

Q. Were any of the firm demands shown on lines 16, 17, 18 and 23 of Table V-A of Exhibit 64 the sole operating responsibility of Penn Water? A. No. Safe Harbor also had an operating responsibility for such demands.

Q. Were any of the firm deliveries shown on lines 8 and 9 of Table V-B of Exhibit 64 the sole operating responsibility of Penn Water? A. No. Safe Harbor also had an operating responsibility for such deliveries.

Q. At Table VI-A of Exhibit 64, Mr. Davis added as a revenue from Baltimore Company to Penn Water, the "Conowingo Backwater Payment" of \$133,750. Was this amount of revenue actually received from Baltimore Company? A. It was not.

Q. From whom did Penn Water receive this revenue? A. From the Susquehanna Electric Company, the operating company of the Conowingo Hydroelectric Development.

Q. Are these payments made under the terms of the contract between Penn Water and the Susquehanna Electric Company, identified as Exhibit 235? A. Yes.

Q. What is the date of this agreement? A. The contract was executed on February 20, 1926.

[16709] Q. Was a certificate of public convenience and necessity issued in connection with this contract by the Public Service Commission of Pennsylvania? A. Yes, that Commission issued a certificate of public convenience after investigation in re: Application Docket 15250-1926, and "found and determined that the granting of said application is necessary and proper for the service, accommodation, convenience and safety of the public and that this Certificate is issued, evidencing its approval of said application as set forth in said report and order." This certificate of public convenience was dated by the Commission November 22, 1926.

Q. What revenues did Penn Water receive from the Susquehanna Electric Company in the year 1930? A. \$124,500.

Q. Did this agreement between Penn Water and Susquehanna Electric Company specifically provide for increased payments in the years 1931, 1932 and 1933? A. It did.

Q. What payments were provided in that agreement for the year 1933? A. \$133,750.

Q. And is that the amount currently being billed to the Susquehanna Electric Company in accord with the terms thereof? [16710] A. It is.

* * *

[16712] Q. What is the present likelihood of Government hydroelectric developments on the Susquehanna watershed or other nearby watersheds that might compete for the present load markets served by Penn Water? [16713]

A. So far as I know, there are no such projects now authorized by Congress. However, there are strong proponents, both within and without the Hall of Congress, for the development of the St. Lawrence River for power in tremendous quantities under Federal subsidies and in addition, the Army Engineers have been, within the past six months, actively engaged in resurveying several potential power sites on the Susquehanna River in cooperation with the Federal Power Commission. There are in existence today several comprehensive reports prepared jointly by the Federal Power Commission and the Army Engineers covering hydroelectric power developments on the Susquehanna, Potomac and Delaware Rivers which could be submitted to Congress on relatively short notice should there be a need for major public works. It is an announced policy of our Government to use such public works as an aid to the national economy in periods of business recession.

Q. In your opinion is the threat of Government subsidized competition one of the existing risks of Penn Water? A. Yes. I believe it is a risk and concern to Penn Water.

The fact that the completion date of a Government subsidized hydroelectric development has not been established, is no assurance that such competition will not be encountered or that the risk of such competition is not currently present.

[16714] Q. Mr. Spaulding, have you recently made a determination of the actual costs of Penn Water's and Safe Harbor's firm power services rendered to Baltimore Company for the year 1946? A. Yes, I have.

MR. SPARKS: I ask that this document entitled "Costs of Firm Power Services" be marked Exhibit 378 for identification.

(The document was marked Exhibit No. 378 for Identification.)

By MR. SPARKS:

Q. I show you this document identified as Exhibit 378 and ask you if it is your determination of Penn Water's and Safe Harbor's costs for firm power services rendered to Baltimore Company in 1946? A. It is.

Q. Will you please explain the distinction between the actual 1946 costs and the adjusted 1946 costs of firm power services rendered to Baltimore Company as shown in this Exhibit 378? A. The actual costs of firm power services rendered to Baltimore in 1946 are related to the actual operating expenses and to the average investment in electric plant for the year 1946, while the adjusted costs of firm power services rendered to Baltimore Company for 1946 reflect certain authorized [16715] increases in plant investment; increases in operating expenses as estimated for current conditions, largely the result of salary adjustments made in 1946 but only in small part reflected in the expenses of that year; and an adjustment of Safe Harbor's State and Federal income taxes to eliminate the abnormalities of its actual 1946 income taxes resulting from the refunding of Safe Harbor's bonds in that year.

Q. The summary of the results of this cost of service study is shown on the second page of this exhibit, is it not? A. Yes.

Q. Did you generally follow the same methods of cost allocation in this exhibit as you used in connection with Exhibit 35? A. I did.

Q. Did you make any segregation of the investment in the property of Penn Water and S. T. Co. of Md. as between the four general groups shown on Schedule 1a of Exhibit 378 different from that used in Exhibit 35? A. The only change made was with respect to the allocation of the present investment in Manor Substation. This investment was all classified as "General Production Plant" in Exhibit 35, but upon further consideration has been classified with the 220 Kv. transmission lines in Exhibit 378 as "Special Facilities for Baltimore Company."

Q. Did you make any segregation of the investment in the [16716] property of Safe Harbor as between the two general groups shown on Schedule 2a of Exhibit 378 different from that used in Exhibit 35? A. No.

Q. Referring to Schedule 1a of Exhibit 378, is the amount shown in Item 6, "Excess of Book Cost over Revised Original Cost" different from that used in connection with Exhibit 35? A. Yes. It is slightly greater in Exhibit 378, reflecting the adjustments subsequently admitted by the company. The amounts shown in Item 5 on Schedule 1a of Exhibit 378 are consistent with Mr. Eichhorn's reconciliation exhibit, identified as Exhibit 320.

Q. Have you made any other changes in your methods of allocations in Exhibit 378 as compared with those used in Exhibit 35? A. Yes, there are a few minor changes, relating to the allocations of working capital, general expenses and general taxes, but none of such changes in method of allocation are of material significance.

Q. In your determination of the adjusted 1946 costs of firm power services rendered to Baltimore Company,

what additional electric plant investments have you included? A. In addition to the costs which have been incurred on construction work in progress, and which I have included [16717] in both the actual and adjusted costs of service, as I did in Exhibit 35, I have here included in the adjusted 1946 costs of service, the estimated costs to complete certain plant additions which have been authorized by the board of directors and the management, and work on which is now in progress. The major item so included and which accounts for two-thirds of the total additional costs, was the 66 Kv. switching yard at Manor Substation, together with related additions to transmission plant, the estimated net increase in electric plant being approximately \$550,000; of which \$30,000 will be net increase in Safe Harbor's electric plant.

The other items of investment included were Penn Water's costs of providing additional cooling equipment for power transformers; the enclosure and modernization of the Holtwood Hydro control room; the installation of additional ground wires for the Philadelphia Road-Gunpowder transmission line to increase the reliability of this line for Baltimore's sole use; additional hydraulic concentrator equipment for river coal recovery; additions to the steam station boiler ash disposal system; and certain other items which for Penn Water amounted to a total net increase in electric plant of \$750,000, as shown on Schedule 1b and for Safe Harbor a net increase of \$120,000, as shown on Schedule 2b of Exhibit 378. It should be mentioned that the net additions reflected in the adjusted 1946 costs of service do not include all of the [16718] construction budget items contemplated for 1947.

Q. What was your basis for adjusting the operating expenses which you earlier referred to in connection with your adjusted 1946 costs of service in Exhibit 378? A. There were definite increases in wages and salaries made throughout the companies, effective 1946, and which were not fully reflected in the operating expenses for 1946. There

was also certain maintenance work which was scheduled for 1946, but which due to lack of manpower and materials had to be deferred. Such maintenance work is of a routine nature such as must be planned each year and, therefore, an adjustment has been made to the 1946 actual operating expenses in such connection. However, I have not attempted in these adjustments to reflect my present estimates of further increases in operating expenses for the immediate future, resulting from the present trends in labor rates and costs of materials.

MR. SPARKS: I ask that this document headed "Comparison of Bills for and Costs of Firm Power Services" be identified as Exhibit 379.

(The document was marked Exhibit No. 379 for Identification.)

By MR. SPARKS:

Q. Mr. Spaulding, I show you Exhibit 379. Does Schedule A of Exhibit 379 show your comparison of the costs of [16719] Penn Water's and Safe Harbor's firm power services rendered to Baltimore Company, shown in Exhibit 378, with the bills applicable to firm power services rendered to Baltimore Company for the year 1946? A. It does.

Q. Will you please explain the derivation of the amounts shown in Schedule A of Exhibit 379 from the bills applicable to firm power services rendered to Baltimore Company for the year 1946? A. Schedule B of Exhibit 379 is a copy of Safe Harbor Company's actual net bill to Baltimore Company and Holtwood Company for the year 1946. Item (g) of Schedule B shows the amount of this bill to Baltimore Company for 1946 to have been \$2,033,001.59. This is the amount shown on Schedule A of Exhibit 379.

Schedule C of Exhibit 379 is Penn Water's net bill to Baltimore Company for the year 1946, item (i) thereof showing this amount to have been \$1,399,331.10.

Schedule D of Exhibit 379 is Penn Water's firm power bill to Baltimore Company for the year 1946, computed in the same manner as the firm power bills to Baltimore Company, incorporated in Exhibit 19, except that this Schedule D is based on actual 1946 results rather than the earlier estimates for the year 1946. Penn Water's firm power bill to Baltimore Company shown on Schedule D is \$2,824,420.03. This is the [16720] amount shown on Schedule A of Exhibit 379.

Q. What difference did you find between the total costs incurred by Penn Water and Safe Harbor in rendering firm power services to Baltimore Company and the amounts of their firm power bills to Baltimore Company in 1946?

A. The sum of the combined bills applicable to firm power services rendered to Baltimore Company in 1946 was less than the combined costs for firm power services rendered to Baltimore Company by \$266,578.

Q. On Schedule A of Exhibit 379, there is shown as the "Adjusted" cost of firm power services rendered to Baltimore for 1946 an amount of \$5,663,000. Is such adjusted combined costs comparable to the actual combined bills for firm power services shown in the first column of this exhibit?

A. No, it is not.

Q. Why not?

A. Should any regulatory authority having jurisdiction, direct the continuance of the present forms of contracts between Safe Harbor, Penn Water and Baltimore Companies (Items E, F & G and Items H & I), the bills to Baltimore Company applicable to firm power services would increase with actual increases in operating expenses, taxes and increases in electric plant. The combined bills applicable to firm power services to Baltimore Company would, therefore, on an adjusted basis, be different from the billing amounts [16721] shown on Schedule A of Exhibit 379. However, should any regulatory authority having jurisdiction, direct that the charges to Baltimore Company by Penn Water and Safe Harbor in the future be directly related to the services rendered, then the

adjusted 1946 costs, shown on Schedule A of Exhibit 379, should be considered in connection with the actual 1946 firm power services rendered to Baltimore Company.

[16787]

CROSS EXAMINATION

By MR. WAHRENBROOK:

[16796] Q. Can you point out a single hour of these I have referred to in Exhibit 42 in which a substantial amount of energy was supplied from the station service bus to the main bus at Safe Harbor? A. No, I cannot.

[16797] Q. It would be necessary to find such hours in order to show Mr. Roland's conclusions were inaccurate, would it not?

THE WITNESS: If he made such a conclusion, yes.

[16814] Q. All right. I am trying to get the effect of your limitation. As I understood it, you said that when the Safe Harbor was not supplying electric energy then its only contribution in the nature of a power factor cooperation and in the nature of a voltage regulation was through the supply of RKVA. A. That is correct.

Q. I want to understand what its contribution in the way of power factor cooperation or voltage regulation is during those hours when it supplies electric energy. A. I am sorry I didn't understand your question. Generally it is the same. There may be also a change in the supply of energy which results from the power factor cooperation and voltage control.

Q. But that change would be a change in the supply of the electric energy and reflected in the logging of the energy? A. That is correct.

Q. So that whether or not Safe Harbor is supplying [16815] electric energy, its services of voltage regulation and power factor cooperation consist in the supply of RKVA? A. Generally that is correct.

Q. Is the measurement of RKVA the measurement of the power factor cooperation which Safe Harbor supplies, or do you mean something else by power factor cooperation than the supply of kilovars?

THE WITNESS: May I have the question again, please?
(Question read.)

THE WITNESS: The answer to the last part of your question is that the degree or the amount of power factor cooperation can be measured in terms of the amount of RKVA provided.

By MR. WAHRENBROCK:

Q. And is a kilovar a measure of RKVA? A. Yes.

Q. Do you have meters which so measure the RKVA supplied from Safe Harbor? Does Safe Harbor have meters which measure the RKVA which it supplies? A. They do.

Q. Are those meters logged? A. They are.

Q. Hourly? A. They are.

Q. Do its contracts with Penn Water provide for a charge [16816] per kilovar or thousand kilovars? A. No, the charges are independent of the services rendered.

Q. There is no relationship between any payment or charge between those companies and the supply of RKVA? A. You are referring now still to Safe Harbor and Penn Water?

Q. Yes. A. There is no component of the charges that are related to the amount of RKVA provided.

[16862] Q. And those services so supplied by Safe Harbor are, as you have said, the obligation of Safe Harbor to supply?

[16863] THE WITNESS: Any obligation of Safe Harbor to provide these services is part of the joint obligation of Penn Water and Safe Harbor to these Pennsylvania customers, to their Pennsylvania customers, together with the

obligation or operating responsibility which Safe Harbor may have to provide those services to Penn Water and Baltimore.

. . .

Q. When you speak of any obligation, is there any obligation to furnish such services by Safe Harbor? A. There is a joint obligation to furnish such services on behalf of Penn Water and Safe Harbor.

[16864] Q. Does that place any obligation on Safe Harbor?

A. I don't know.

Q. Can you refer to any provision in the items E, F and G in which there is a joint obligation for the supply of those services by Safe Harbor in any part?

. . .

THE WITNESS: I could not find and would not expect to find in E, F and G any designation of joint obligation on behalf of Penn Water and Safe Harbor to their Pennsylvania customers as an operating matter.

By MR. WAHRENBROCK:

Q. Are you able to refer to any other contract under which Safe Harbor, either alone or with any other company, is obligated to supply these services to which I have just referred? A. Yes.

. . .

[16865] Q. What contracts?

. . .

THE WITNESS: I have in mind the power supply contract with the Philadelphia Electric Company for their Coatesville division, the power supply contract with the Pennsylvania Power & Light Company for their Lancaster Division, the power supply contract of the Pennsylvania Railroad.

. . .

[16866] Q. I think we can close this now.

Is there any obligation to render such service by Safe Harbor either to Penn Water or to Baltimore under items E, F and G?

THE WITNESS: I think there are operating responsibilities for Safe Harbor to provide such services under E, F and G, under contract identified as items E, F and G.

Q. By that do you mean that there are provisions in items E, F and G which so provide?

THE WITNESS: No, I think I stated that I considered that under the provisions of E, F and G there are operating responsibilities for Safe Harbor to provide such services [16867] at times.

[16905] Q. How do the other services affect the meter readings of energy flows in which Maryland energy is commingled?

[16907] THE WITNESS: The other electric services, and I am referring to voltage regulation, power factor cooperation, materially change the amount of energy recorded on the meters and shown on certain columns of Exhibit 42 from what would have been recorded on those same meters had such services not been rendered by Safe Harbor.

In addition, these services rendered by Safe Harbor affect the other metered readings, and I refer to the KVA metered readings, which are part of the services being rendered and about which we are talking.

Q. Do I understand you to say that these meter readings which are reflected in Exhibit 42, those columns which are based on meter readings which you previously identi-

fied, that such meter readings do reflect energy flows which are the [16908] result of all of these other electric services supplied, as you say, at that time?

THE WITNESS: They do.

[16945]

WILLIAM F. UHL

CROSS EXAMINATION

By MR. HALL:

Q. Mr. Uhl, by whom were you requested to make a valuation of the land and water rights of Holtwood project?

A. By Mr. Spaulding and Mr. Gunn of the Pennsylvania Water and Power Company.

Q. When did they request you to make that valuation?

A. Some time in 1945. I wouldn't be able to say exactly.

Q. Over what period of time were you engaged in making this study and determination? A. Well, I studied the matter off and on as time became available to me. Just how long, I really couldn't tell you. That is a matter of three or four months, perhaps six months.

Q. During 1946? [16946] A. Yes, the latter part of 1945 and the early part of 1946.

Q. What material furnished by the representatives of Penn. Water did you review in connection with your fair value determination? A. Principally the historical data which is contained in one of the exhibits which I think is in the record here. I don't recall the number of it.

Q. Do you mean Exhibits 26 and 27? A. I would have to see them to be sure.

MR. KING: Excuse me, Mr. Hall, you said fair value determination. I think that was inadvertent, but I don't think that is the witness' statement.

MR. HALL: Do you mean to say fair market value determination would be more accurate?

MR. KING: Yes.

By MR. HALL:

Q. If I substituted that term, I assume your answer would be the same? A. I assumed you meant fair market value, yes.

Q. When I referred to Exhibit 26, I referred to a document which is in evidence and is entitled "History of the Holtwood Development to the Beginning of Commercial Operation, October 1, 1911." Is that one of the documents to which you referred? [16947] A. Yes, that is one of the documents which was furnished to me.

. . .

[16948] Q. Did you not also review data furnished by Penn Water, and which was referred to by Mr. Goldberg in his preliminary questions a few days ago, which data consisted of power market surveys and the document which he referred to was made up of 68 separate documents? A. I thought that was the one we were just looking at.

Q. The one you were referring to a minute ago, Mr. Uhl, was Exhibit No. 27. The document that Mr. Goldberg referred you to a few days ago, in the preliminary examination, was the one which I now place before you. [16949] A. This is the one that I had. I never had this one.

Q. You never had Exhibit 27? A. They look so much alike that I thought it was the same one.

Q. You never had Exhibit 27; is that right? A. No, sir, I don't recall ever having that. I never saw it. I thought that was the same one. I am sorry.

Q. Did you study any material in connection with making your determination, not furnished by Penn Water? A. No, sir. I did recall my own experience in connection with Penn Water in the early days.

Q. In other words, if you considered additional material, it was limited to your own experience? A. The

knowledge of the situation back in the beginning of 1905 and 1906 with which I was familiar.

Q. What situation are you referring to? A. The water power situation there at McCall's Ferry.

Q. Is it not a fact that you considered information relating to water power in the New England States? A. Everywhere that I had knowledge of. I considered all the knowledge that I had of water power, everywhere, sir.

Q. Did the documents which you reviewed for the purposes of your study cover the whole history of the project [16950] from approximately 1900 to the date of your determination?

MR. KING: You mean of the Holtwood project?

MR. HALL: Yes.

A. From what date did you say?

By MR. HALL:

Q. From approximately 1900 to the date of your determination? A. Yes; some of the history went further back than that, even, during the nineties.

Q. Did you ever visit the Holtwood project for the purpose of determining the fair market value of the lands and water rights? A. Well, that was incidental to my visits. I visited the property a number of times, and I visited the property back in 1905 and 1906, but that wasn't the only thing that I had in mind. There are other things I had in mind as far as that goes. I think I visited the property again in 1910 and 1911, around there.

Q. When you—if you did—visited the project in connection with this case, did you do anything which had a connection with the determination of the fair market value of the lands and water rights? A. No.

TRIAL EXAMINER: What was the purpose of your visits in 1905 and 1906 and 1910?

[16951] THE WITNESS: I was at that time employed by the Allis Chalmers Manufacturing Company, and I tried

to sell them the hydraulic and electrical equipment for the project.

By MR. HALL:

Q. But in 1905 and 1906 you did nothing in connection with placing a fair market value on the lands and water rights which would be required for the Holtwood project?

A. No, sir.

Q. How about 1910 and 1911? A. No.

Q. Were you, at the outset of your fair market value study, aware of the purpose for which you were to make your fair market value determination? A. No, I don't think I recall that I was.

Q. When did you first become aware of the purpose for which you were to make your determination? A. Well, the purpose for which I made my examination was to determine the market value of the water rights.

Q. And in what connection was that determination to be made? A. I didn't know in the beginning in what connection it was made for. Just in connection with this rate case.

. . .

[16952] Q. Well, what phase of this rate case do you have reference to? A. The value of it, the value of the property.

Q. How about the cash value of the securities involved in this case? A. No, I didn't hear anything about that in the beginning. I heard about that later.

Q. But you were aware of the fact that this determination was being made in connection with this particular hearing? A. This rate case, yes, sir.

Q. When did you become aware that your valuation was to be related to the cash value of the securities issued by McCall Ferry? A. Well, I overheard conversations from time to time.

Q. When? A. I can't tell you that.

Q. What do you mean you overheard? Do you mean by that that you were in any conference at which that sub-

ject was discussed? A. I was in a good many conferences, yes, sir, in which that was discussed. I don't mean many conferences where that particular thing was discussed, but I was present at a good many conferences.

Q. Both before and after your study? [16953] A. No, I don't think that—I wasn't interested in what it was for, Mr. Hall. I took a purely professional attitude towards it. I was asked to determine the market value. What they wanted to use it for, I really was not interested in.

Q. Well, you knew what it was, but you weren't interested in it? A. Well, I later found out why it was. As far as I knew, it was just to determine the value of this property.

Q. When did you reach your conclusion as to the fair market value of the property? A. Early in 1946.

Q. How early in 1946? A. That, I couldn't say. Some time before writing this memorandum, which I think is one of the exhibits in this case, the date of which is March 18, 1946.

MR. KING: It is not an exhibit, Mr. Uhl, but it has been furnished to Mr. Goldberg.

A. It was furnished with my working papers; that is right.

By MR. HALL:

Q. For the purpose of your determination, did you consider that the value of Holtwood site was represented by its value for the best available use to which it could be put? [16954] A. No, I was only interested in its market value as water rights. Whether another—

Q. Water rights for what purpose? A. For power purpose. Whether another use could have been made of it, I wasn't interested in it.

Q. Did you, for the purpose of your determination, consider that the power development was the most valuable use to which the lands forming the Holtwood site could be put? A. Usually a combination of parcels of land, in a

situation of that kind, is found to have its most valuable use for that purpose.

Q. Wasn't that the situation here? A. Yes, as far as I was concerned, that was the value I was trying to determine; for that use. Now, whether or not some other use could have been made of it, I wasn't interested in it.

Q. What made the land and water rights more valuable for water power development than for any other purpose?

MR. KING: I object to that question. The witness hasn't testified to that, Mr. Examiner.

MR. HALL: He said that was the situation here, Mr. Examiner.

TRIAL EXAMINER: Well, I don't think it is necessary to go back to check the record too carefully. I think the [16955] witness has implied that. The objection is overruled.

* * *

A. I didn't say it was, and I don't know that it was. I said usually combinations of parcels of land of that kind find their most valuable use in that, but whether that was the most valuable use, I don't know, and I wasn't interested in it because all I was interested in was the market value for that particular use.

By MR. HALL:

Q. But did you have any reason to believe that that was not the situation in so far as the Holtwood site was concerned? A. I made no investigation of it, and I have already said that usually a combination of parcels of land in a situation of that kind find their most valuable use for that purpose, but I did not investigate to see whether there was a more valuable use of it, whether a more valuable use could be made of it.

Q. Do you have any reason to believe that what you just stated is not the situation with reference to the Holtwood site? A. Pardon me, Mr. Hall, I don't quite understand your question.

Q. Well, you have testified that the value for water [16956] power purposes is \$3,300,000. Does that land have a greater value for any other purpose? A. You mean did it have, in March, 1905? I don't know.

Q. Is it reasonable to assume that it did have a greater value for any other purpose? A. I don't know. I made no investigation, so I am not in a position to answer that question.

Q. Mr. Uhl, in the third complete paragraph on page 3 of your report, which you referred to a few minutes ago, did you not state "These lands, unconsolidated, could not be put to use for power development, and this is a more valuable use than any to which they could otherwise have been put." A. That is right. I did say that in my working papers.

Q. And you still believe what you said in your report, do you not? A. As far as my investigations went, yes, but only so far. Whether there was "gold in them there hills" or not, I didn't look into it—oil or coal or any other thing—Mr. Hall.

Q. Mr. Uhl, just exactly what was the character of the lands which you valued? Were they farm lands or what? A. Partly. Partly farm lands, partly hillsides, [16957] partly river bottom—all the lands necessary to flow the water to an elevation of 155.

Q. Was the farm land under cultivation in 1905? A. In part. I will have to admit that I didn't investigate it in 1905 to see whether it was or not.

Q. Well, do you know whether or not the farm lands were cultivated? A. No, I don't.

Q. Is your valuation limited to the lands which Hutchinson transferred or caused to be transferred to McCall Ferry for a consideration of \$750,000 and certain securities? A. The land I valued was only the land necessary to make a water power development at that site to elevation 155, with a dam with crest elevation 155.

* * *

[16958] Q. Mr. Uhl, do you know whether your valuation covers property in addition to that which Hutchinson transferred or caused to be transferred to McCall Ferry for a consideration of \$750,000 and certain securities? A. My valuation covers only the lands and rights necessary to make a development as it was contemplated on March 1, 1905, that is, with a dam cresting elevation 155.

TRIAL EXAMINER: And in connection with that limitation of the area which you valued, you made no check to determine whether it corresponded with any transfers made to McCall Ferry by Hutchinson?

[16959] THE WITNESS: That is right; you are right. I did not.

By Mr. HALL:

Q. That was March, 1905? A. That is correct. I did not make any check to see whether more or less land was involved.

Q. In other words, I take it you were not concerned from whom the land was obtained but what land was required for the total development; is that right? A. That is correct.

Q. Mr. Uhl, could the parcels of land forming the Holtwood site, in an unconsolidated state, be put to use for power development? A. No, sir.

Q. Am I correct in stating that you have testified that the Holtwood site was made possible by the consolidation, in one ownership, of what were originally individual parcels, separately owned, and on none of those parcels was there a complete feasible individual power site? A. That is right.

Q. On what date was the consolidation of individual parcels complete? A. That, I cannot tell you. I assumed that it was all assembled on March 1, 1905.

Q. If we assume that they had not all been assembled on that date, what effect would it have on your \$3,300,000

[16960] determination? A. That I couldn't say unless you were to tell me how much was lacking.

Q. Well, you don't know that; is that right? A. Oh, no, I assumed that it was all assembled, all that was necessary for making the development, as of that date.

Q. Using your approach, does this consolidation create added value for those lands? A. Added to what?

Q. Over and above the bare cost of the individual parcels. A. It may and it may not.

Q. You made no determination of that fact? A. No, I didn't.

Q. You were not concerned with what they actually paid for them? A. No, sir, not at all.

MR. KING: What who actually paid for it?

MR. HALL: He answered the question, Mr. King. I think the witness understood it.

MR. KING: Well, I would like to find out.

TRIAL EXAMINER: You may read the question and answer, Mr. Reporter.

(Question and answer read.)

[16961] MR. KING: I want to know who you mean by "they".

MR. HALL: Anybody.

MR. KING: That clarifies it.

By MR. HALL:

Q. That is what I had in mind. A. I understand: anybody is what I had in mind.

Q. Including McCall Ferry. A. Anybody who might be interested in buying it.

Q. Using your approach, Mr. Uhl, you assumed that collectively the individual parcels had a greater value than those parcels would have had individually? A. That is usually true, but I made no study to determine if that was so in this particular case.

Q. Well, you said that, under single control, they made power development feasible? A. That is right.

Q. Doesn't that mean that, according to your approach, they had a greater value collectively than the tracts would have had individually for power purposes? A. For power purposes, they had no value except as an assembled body of individual parcels.

Q. Isn't it also true that the value for water power purposes resulting from consolidation cost the purchaser of the individual tracts nothing?

MR. KING: What do you mean by "purchaser of the [16962] individual tracts", Mr. Hall?

MR. HALL: Anyone who would be willing to purchase the land.

MR. KING: Are you talking about McCall Ferry power land now?

MR. HALL: I am talking about the person who would effect the consolidation.

THE WITNESS: It cost them a great deal, I would say.

By MR. HALL:

Q. What did it cost over and above the bare consideration of the individual purchases? A. To begin with, I assume the gentleman thought his time was worth something and the risks he was taking in connection with assembling the land. Then, there are such things as the cost of surveys, title searches, options, legal and court expense, in clearing titles, cost of deeds and recording deeds, cost of plans and estimates, cost of surveys of available market, and the negotiations to secure contracts for power, to eliminate competition, and especially taxes and carrying charges from the date when the first money is expended on the project until the date of sale of a complete and feasible power site. But on top of all that, the kind of people who do that sort of thing usually consider their own time very valuable, and they should, by right, do so.